The Builder.

VOL. LXXIV. No. 2889. JUNE 18, 1898.

ILLUSTRATIONS.

Proposed Mansion.—Mr. H. Heathcote Statham, F.R.I.B.A., Architect ..... *Double-Page Photo-Litho.*
"Hildon," Hants.—Mr. Aston Webb, F.R.I.B.A., Architect ..... *Two Double-Page Ink-Photos.*
Bronze Bracket: Italian Sixteenth Century.—Drawn by Mr. H. F. Waring ..... *Single-Page Ink-Photo.*
Chimney Piece in Carved Stone, from a Palace near Brescia.—Drawn by Mr. H. F. Waring ..... *Single-Page Ink-Photo.*

Blocks in Text.

Plan of the Châ eau of Chantilly ..... Page 580
Diagram to Paper on Setting Out Skew Bridge Voussoirs. Page 582
"Hildon," Hants. Ground Plan ..... Page 590

CONTENTS.

A Chantilly 579
A Graphic Method of Setting-out the Face Angles of Skew Bridge Voussoirs 581
Notes 582
Architecture at the Royal Academy.—III. 584
The Acetylene Exhibition 585
The Royal Architectural Museum and Westminster School of Art 585
The Luxfer Prisms 586
The Incorporated Association of Municipal and County Engineers 586
Architectural Societies 588
Competitions 588
Books Received 589
Training of Workmen 589
Insurance for Workmen 589
Books: A. B. Clifton's "Lichfield: The Cathedral and See"; A. G. Elliott's "Industrial Electricity"; "Proceedings of the Thirty-first Annual Convention of the American Institute of Architects, Providence, U.S.A."; "Public Works in Lancashire for the Relief of Distress among the Unemployed Factory Hands during the Cotton Famine, 1863-66"; "The 'Journal' of the Sanitary Institute"; T. Harry Greenwood's "Timber Calculator"; T. A. Cheetham's "Elementary Chemistry, Practical and Theoretical: First Year's Course" 588-589
Art Metal Exhibition 590
Portland Cement Kilns 590
Red Ants 590
Proposed Mansion—Elevation and Plans 590
Hildon, Hants 590
Bronze Bracket, South Kensington Museum 591
Chimney-piece, South Kensington Museum 591
The London Building Act, 1894 592
The Student's Column: The Calculation of Strength of Materials and Resistances.—XXIV. 591
General Building News 592
Sanitary and Engineering News 595
Stained Glass and Decoration 595
Foreign 595
Miscellaneous 595
Capital and Labour 597
Legal 597
Meetings 598
Recent Patents 598
Some Recent Sales of Property 599
Prices Current of Materials 602
Tenders 602

At Chantilly.

IN the *Builder* for July 26 and August 2, 1884, will be found a historical sketch of the Château of Chantilly, published then as an anonymous contribution, but written, we may now say, by no less a person than the late M. Charles Yriarte. At that time nothing had been said as to the intention of its owner to leave the château and its contents as a legacy to his country, if the intention were then formed. The account was written apropos of the completion, just at that time, of the rebuilding of the portion of the château which had been demolished at the Revolution. Now that the whole building, ancient and modern, with its contents, has passed into a new phase of existence and become public property, it was impossible to be at Paris without making a visit to it, and considering the restored palace and its collections from an English point of view.

Chantilly is about thirty miles by rail from Paris (twenty-five in a straight line) and it may be as well to say that the château which is conspicuous to the right of the railway, just after passing Chantilly station on the road to Paris, is not the château of Chantilly, though generally taken for it by railway travellers; the Chantilly palace is on the other side of the railroad and is not visible from it. Since it was opened to the public on Sundays, Tuesdays, and Thursdays, the Nord railway company have run express or what they call "excursion" trains to Chantilly; but the intending visitor, after he has discovered the special train and its special booking-office, for which he will probably receive three different directions from as many different officials (for French terminal stations are all like Waterloo Station—no one knows anything), will also discover that while in England an excursion train always means a cheap train, in France it means one for which you pay extra.

Once started, however, the train does run there without stopping, and the transit is quick enough; and as the gates of the château are not opened till noon, there is time to walk there leisurely by the drive that runs through the beautiful woods, a much pleasanter way than going by the town. On emerging from the wood we come on the château from much the same point of view as that shown in the lithographic illustration, from M. Daumet's drawing, published in our issue of July 26, 1884. The view is rather a shock to the visitor who has had anything like the idea of a French Renaissance château in his mind, for from this point of view nearly all that can be seen is redolent of the Ecole des Beaux-Arts. The accompanying plan (see next page) will serve to explain how the land lies. The block marked A, once the old portion of the château, is now the new portion, built from the designs of the Duc d'Aumale's architect, M. Daumet. This portion follows the lines of the mediæval château, and is at least the third building on this part of the site. The foundation is known to date from at least the thirteenth century, and how many times the mediæval château may have been rebuilt there is no knowing; but the latest mediæval version of it was still in existence when the Constable Anne de Montmorency, about 1540, gave it a Renaissance face to the interior of the courtyard, retaining the mediæval exterior with its machicolated towers (the same kind of alteration which was made to so many Scotch castles in the Renaissance period), and at the same time added the other and smaller rectangular block (B), which was called the Châtelet, and was designed by Jean Bullant, and is almost the only ancient portion of the château now left. About the middle of the seventeenth century "the great Condé" pulled down and rebuilt the whole of block A, except the circular angle towers, and the bases of the towers flanking the main entrance, and refitted the interior of the Châtelet in the taste of his own day. Block A, as before observed, was destroyed during the Revolution, and has now been again rebuilt by the Duc d'Aumale. Only the bases of the mediæval towers still remain as records of its ancient history. When the Châtelet was first built it was separated from the larger block by an arm of the moat crossed by a connecting bridge; this moat was filled up, and the bridge consequently abolished, by the last owner of the Condé line, in 1820. It should be added that the Châtelet stands on a much lower level than the larger block, its first floor being nearly on a level with the ground floor of the latter.

On approaching the château, one is impressed by the large scale of the surroundings. The courtyard gate and bridge are approached by a long sloping causeway of old uneven paving, at the top of which is the open space called the courtyard of the Connétable, from the equestrian statue of the Constable Anne de Montmorency which formerly stood there, and was broken up at the Revolution, to be replaced now by M. Dubois' fine group illustrated in the *Builder* of June 19, 1886. Beyond the statue, to the northward, a mighty flight of steps of great width, more like a hill than a staircase, devised by Le Nôtre, descends to the gardens. All round the buildings extends a wide moat, full of great carp.

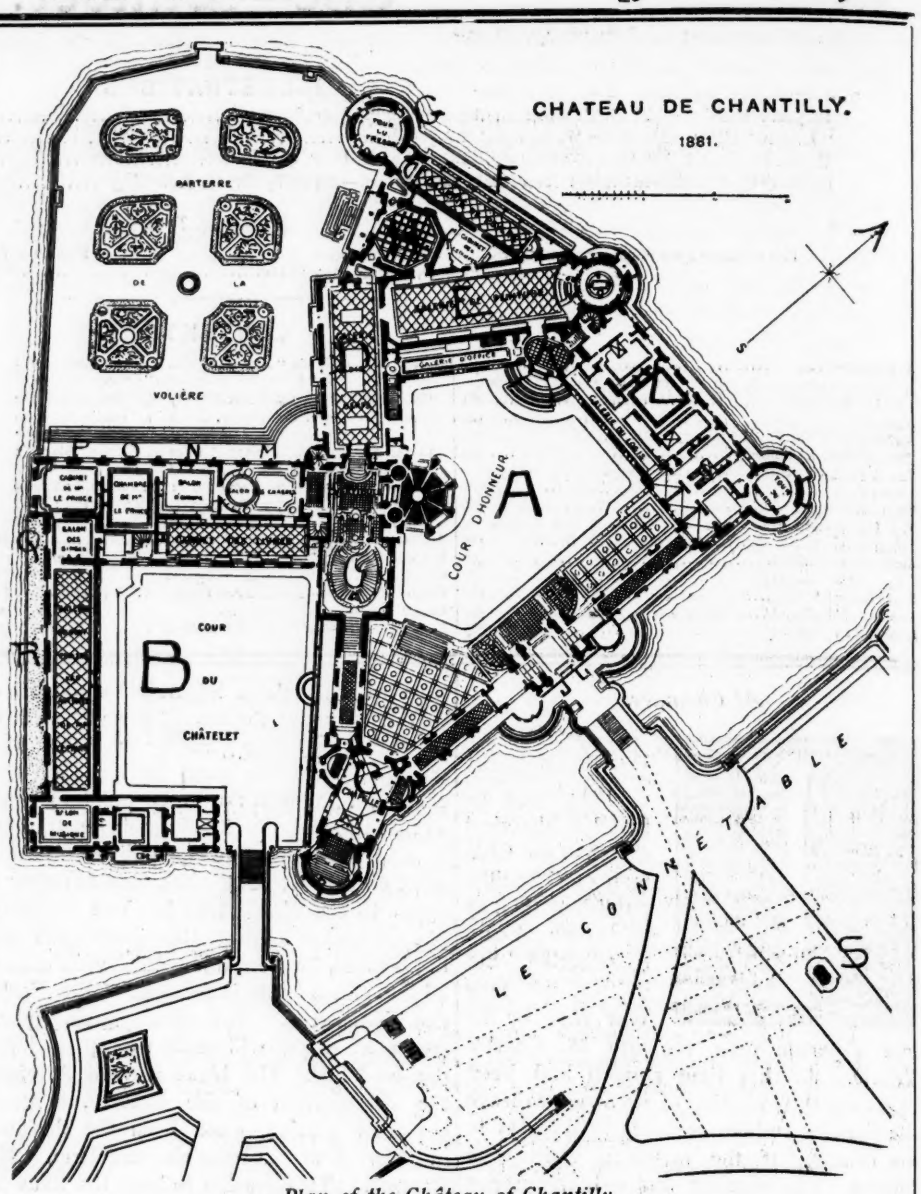
On entering the triangular courtyard the general impression of the new buildings is, as already observed, that they are redolent of the Ecole des Beaux Arts; and however they may appear to French eyes, to the English eye they present a cold, formal and conventional architecture; very much the same, indeed, as one sees in the new Apartment houses of the more costly class in Paris, only treated in a somewhat broader and more dignified manner. After all, however, it may be replied that at least the French have got a school of modern architecture, more decisively than any other nation can be said to have at present; one seems to meet the same style and the same details everywhere in new buildings on which any money is spent; and according to some theories about national architecture this ought to be right. No doubt the architecture thus produced on school lines is always good and scholarly, in a sense; but it cannot be denied that it is cold and monotonous. At the southern angle of the modern building the architect has introduced a touch of modern mediæval treatment in order to distinguish the chapel—a high-pitched roof and a flèche and angle pinnacles, in which there is a general look of mediæval outline, though the details on closer examination are found to be of Renaissance type.

For the main entrance we cross the Cour d'Honneur to the semi-octagonal porch; the entrance hall is on the same level with the principal floor of the Châtelet, the range of rooms of which opens right opposite the entrance door; the floors of the new château

the "Galerie des Cerfs" (which has the appearance and furnishing of a large dining hall) on the right, and the chapel on the left, are reached by short flights of steps. Between the vestibule and the chapel corridor the grand staircase, which leads downwards and not upwards from this floor, and which is barred to the public, is surrounded by a balustrade in hammered and polished metal, made by Moreau *fréres* from the architect's design, which is one of the finest specimens of sumptuous work of this kind to be seen anywhere. Among the most prominent objects around the staircase are also some very fine lamp-bearing statues, caryatides, by Chapu. Mounting the steps to the corridor leading to the chapel, one is astonished on the other hand at the commonplace leaded and tinted glass, the sort that in England is satirically called cathedral glass, inserted in the windows here; a kind of thing that certainly no English architect would allow in a building of this pretension. But the interior of the chapel is a compensation. This chapel, called the "Oratoire Saint-Louis," is ecclesiologically regarded as only the last rebuilding of a chapel founded at the commencement of the fourteenth century, and successively rebuilt in the sixteenth, eighteenth, and nineteenth centuries. Here there is an altar by Jean Goujon, and a quantity of wood fittings of the middle of the sixteenth century, formerly belonging to the chapel of the Château d'Ecouen; there is a great deal of inlaid ornament in this, which, for exquisite and delicate finish and for its perfect preservation, must, as the phrase is, be seen to be believed; it is something unsurpassable in its way.

To get to the rest of the new building we have to return down the steps and through the vestibule and up the opposite steps to the "Galerie des Cerfs" (the revival of an old name), a splendid room containing a long table which is a monumental piece of work. The ceiling is decorated with the armorial bearings of the families which have possessed Chantilly since the twelfth century. Among the other objects in this room are some very fine furniture, some Gobelins tapestries of the seventeenth century, and two decorative paintings by Baudry. The artificial lighting is arranged for in an effective and fanciful manner; a series of bronze arms project from the walls, the hands formed as candlesticks or lamp-holders. The Salon de Peinture, a gallery of about the same size, opens out of the end of this one, to the right. The collection of pictures in this gallery is of more interest in a historical than an artistic sense; it includes specimens of the works of a good many painters of different dates and schools, some of them rather out-of-the-way names; but as old masters, they are all works of secondary value and interest, and a collection of second-rate old masters is a somewhat depressing spectacle. At the end of the gallery the space occupied by the circular turret is worked into a good piece of interior architectural effect, a kind of small rotunda separated by a colonnade from the main room, and with the ceiling painted with an "Enlèvement de Psyche" by Baudry.

Opening from the end of the Galerie de Peinture is the long narrow "Galerie de Psyche," running along one face of the exterior line of the château, and containing a very curious series of windows in grisaille, executed by order of Anne de Montmorency,



Plan of the Château of Chantilly.

REFERENCES.

A The Modern Château.
B The Châtelet.
C The Chapel.
D Galerie des Cerfs.
E Picture Gallery.
F Galerie de Psyche.
G Cabinet des Gemmes.
H Tribune.
K Vestibule to Museum Wing.
L Museum Wing.
M Antichamber to the *suite* of the Prince de Condé, in the Châtelet.
N Salle des Gardes.
O "Chambre de M. le Prince."
P "Grand Cabinet de M. le Prince."
Q "Salle des Singes."
R "Galerie où sont Peintes les Actions de M. le Prince."
S Statue of Anne de Montmorency.

1542-44, and originally fixed in the Château d'Ecouen. They represent forty-four scenes in the legend of Cupid and Psyche as told in the *Golden Ass* of Apuleius, and are attributed to Michel Coxie. These form a most curious example of Renaissance art of the period. The same gallery contains a number of examples of the painter François Clouet, mostly portraits of personages of historic interest; besides examples of other French painters of the same period. At the end of the Psyche Gallery is the "Cabinet des Gemmes," formed in one of the circular turrets, and containing a number of objects both of artistic and historic interest, among which may be specially mentioned the Grand Cross from the treasure of Bâle, and various examples of German silversmiths' work of the thirteenth and fifteenth centuries. In the triangular space between this gallery and the Picture Gallery is formed the octagonal hall called the Tribune, a fine and lofty apartment which contains a good many pictures of real value, especially examples of some of the masters of the French school of the earlier part of the present century; Ingres, Delaroche, and others.

The wing of the building extending along the front in the opposite direction from the Psyche Gallery is laid out as a regular museum, with a succession of small rooms to the front, and two narrow parallel galleries in its rear. The front rooms contain a great many of the smaller pictures of the collection, mostly of the French school, and including many fine works by Ingres, Decamps, Gerome, Gericault, and many other well-known names; and in a purely artistic sense this is the most interesting portion of the picture collection. In the oval vestibule at the re-entering angle of the courtyard is a great Japanese bronze vase which must be one of the finest things of its kind in existence.

Coming back to the main vestibule of the château we enter from it the range of rooms belonging to the Châtelet. This is the most interesting portion of the interior, as most of the furniture and other objects are ancient, and many of them belong to the date when the Prince de Condé refitted this portion of the building, even if they are not part of the original furniture of his restoration. There is a suite of rooms entered in the old fashion through each other. We pass through the Antechamber, the Salle des Gardes, the "Chambre de M. le Prince," the "Grand Cabinet de M. le Prince," a splendidly

decorated and furnished room, the "Salle des Singes," with a fanciful painted decoration in which monkeys predominate, and attributed to Christophe Huet, and thence enter the long and (to modern ideas) low gallery, "où sont peintes les actions de M. le Prince." The paintings are a series by Lecomte, of actions in which Condé was concerned; there are busts of Turenne and Condé on each side of the sumptuous mantelpiece, and various fine pieces of Louis Quinze and other furniture. As we walk through these rooms, looking out on the formal parterre below, and especially in the long reception gallery where the greatness of "M. le Prince" seems to be everywhere proclaimed, one can half realise the large space filled in the life of those days by the figure of the great aristocratic soldier who was hardly second in importance to the King himself, and conjure up in imagination the superb fêtes and receptions which once filled that gallery—all swept away to make room for a common-place Republic, with a respectable tradesman at its head. The Republic is no doubt much the more virtuous institution, but it cannot be denied that it is less picturesque.

Among the rooms in the Châtelet is also the one which has now become the library, where the Duc d'Aumale's collection of rare and curious or beautifully bound books, to the number of about 13,000, has been arranged. This is the long room opening out of the antechamber, and parallel with it and the Salle des Gardes. Visitors are at present only admitted to one end of the room; the library is in process of being catalogued; but we understand that access will be given to it when this is done. Students can however consult any books there under certain conditions and on proper application.

The whole of the modern part of the château has been really built as a private art museum and an example of modern French architecture based on the ancient style; and it is in that light that it must be regarded. As far as the very multifarious contents of the Musée Condé, as it is now called, are concerned, there is perhaps room for a little disappointment. There are numbers of curious and interesting objects—china, tapestries, many others which we have not touched upon; but the number of things which are of the highest value as works of art, apart from historical interest, is not so great as might have been expected. A visitor who was in France for the special purpose of studying the history of French painting, however, assured us that the value of the collection of paintings, in that sense, had surpassed his expectations; and the number of curious and out-of-the-way objects of ancient work, of different kinds, which are to be met with, renders a walk through the galleries a series of surprises. In fact the collection will be more appreciated, perhaps, by those who visit it for the purpose of study than by those who expect to see a great art-exhibition. Architecturally the exterior of the Châtelet is a beautiful piece of work of its period, only suffering from having been too much cleaned up by the architect for the restoration; and the new building, though modern in style, at all events follows the lines of the ancient one, and gives us, with its moat and its other surroundings, a tolerably good realisation of the general aspect of a French palatial château of the later Renaissance period, discounting the differences in detail.

Visitors who approach by the street, however, and not by the park, will find near to the end of the small town a great late Renaissance building totally untouched and unrestored; the immense and palatial stables, namely, erected by Prince Henri de Bourbon in 1719-35, and which, if they were nearer to the château, would fairly eclipse it. This is a vast building as large as a cathedral, consisting, as one may say, of two long aisles divided by a great open space in the centre—a square with the angles cut off, and surmounted by a cupola. Externally the building is a vast and symmetrical mass of rusticated masonry. Internally the two aisles are roofed with a stone semicircular barrel vault with broad flat ribs dividing it into bays, and Welsh vaults between to the windows. In the central paved space, which is large enough to exercise horses in, is a magnificent stone drinking trough against the wall, covered with sculpture, and backed by a great stele or pyramid rising behind it, bearing the inscription—"Louis Henri de Bourbon, VII. Prince de Condé, a fait construire cette écurie et les bâtiments qui en dependent: commencés 1719 et finis 1735." High up on the wall are stags and other heraldic emblems sculptured in relief. One of the aisles is nearly filled with modern stable fittings, the other is completely empty and bare. But the appearance of this sumptuous and monumental building, erected merely for stables and as a dependency to a private mansion, gives one a vivid idea of the sumptuous and stately nature of the life led by great French nobles in the eighteenth century. To be sure, when one reflects that the money for all this was probably wrung from the blood and sweat of the French peasantry, one feels that there is another side to the picture; but the building is at all events harmless now, and, to an architect, it is certainly the thing best worth seeing at Chantilly.

A GRAPHIC METHOD OF SETTING-OUT THE FACE-ANGLES OF SKEW BRIDGE VOUSSOIRS.

BY H. H. HUMPHREYS, A.M.INST.C.E.

THE setting-out of arch voussoirs for the face of skew bridges is confessedly a somewhat difficult task, as a considerable knowledge of descriptive geometry is required, in order to lay down lines for the various templates required by the stone-mason.

Peter Nicholson was the first to grasp the problem in its entirety, and his work upon the subject is still the best book extant. Unfortunately the last edition is out of print, and as second-hand copies are scarce and exceedingly expensive, they are out of reach of the majority of engineers who are engaged on skew bridge work. Mr. J. H. Watson Buck's work is an admirable text-book, but it carries one rather further into the mathematics of the subject than is needful or desirable, when the same results can be obtained by less complicated graphic methods.

The crux of platform work is undoubtedly the setting out of correct templates for face angles—that is, angles contained between the coursing osculatory circle and the face joints of the arch. Nicholson only gives a method which approximates to correctness, but the way devised by Mr. W. H. Barlow, and given in Mr. Watson Buck's book, is entirely correct; it has, however, one serious disadvantage, viz., it is harder to follow than a graphic method.

When getting out the working drawings for several oblique arches, my then chief (Mr. D. Connery, M.E., A.M.Inst.C.E.) devised the following solution for the vexed problem, and he has subsequently given me permission to publish it, insisting all the while that some credit is due to me for the discovery. I much regret that his view of the matter is incorrect, and if credit be deserved by myself, it will only be due for the publication of a method which I believe to be the most simple yet given. It must be clearly understood, however, that this article is not a general exposition of platform work in connexion with skew arches, and therefore a knowledge of the "developments" and spiral surfaces is assumed for the reader, as is also a familiarity with the usual terminology employed.

Let us suppose that, in accordance with the usual custom, one half of the skew elevation of the arch has been set out at full size upon the platform, in order to obtain the zinc face moulds, and that the face angles are now required to complete the template lines. The example given in the diagram (see next page) is from an arch, segmental in square cross section, and having a radius of 19 ft. 6 in. The line D^1C will, of course, have been laid down on the platform in order to obtain the foci of the ellipse forming the intrados of the arch.

From the point C set off the angle of skew (θ), in the present case 37 deg. 52 min., and produce CE^1 until a perpendicular from the end of it is approximately vertically below the springer. At O (the focal centre) strike out the osculatory circle MOL. Imagine that the diagram is hinged on the line D^1C, and that therefore this line serves the double purpose of being the transverse axis of the cylinder (cut on the skew), and also the plan of the face line of the arch; imagine also that the line E^1C is the plan of the longitudinal axis of the cylinder and that it is therefore in a plane which is at right angles to the plane of the face elevation.

Since O is the focal centre, it obviously lies in the same plane as the face of the voussoirs, and all joints produced will therefore pass through it.

Suppose now that a rod of the length of the square radius (19 ft. 6 in.) is fixed to the longitudinal axis line in such a way that it must always be at right angles to it, if considered in plan, but is free to revolve around and slide along it, it is plain that the loose end of this rod can be made to just touch each of the face joints in turn if it is moved forward along the axis line; drop perpendiculars from any of the required face joints A^1 A^2 A^3 A^4 on to the line D^1C; raise perpendiculars from the line E^1C to intersect the points D^1 D^2 D^3 D^4, and consider that the radius lines D^1E^1, &c., have been produced across the beds of the voussoirs; it is evident that these radius lines will intersect at right angles a tangent to the coursing osculatory circle at any of the points A^1 A^2, &c., and that the angle between this radius line and the face of the voussoir will be the angle required. An imaginary triangle has now been formed, of which one side is always the varying distance A^1O A^2O, &c. The second side is

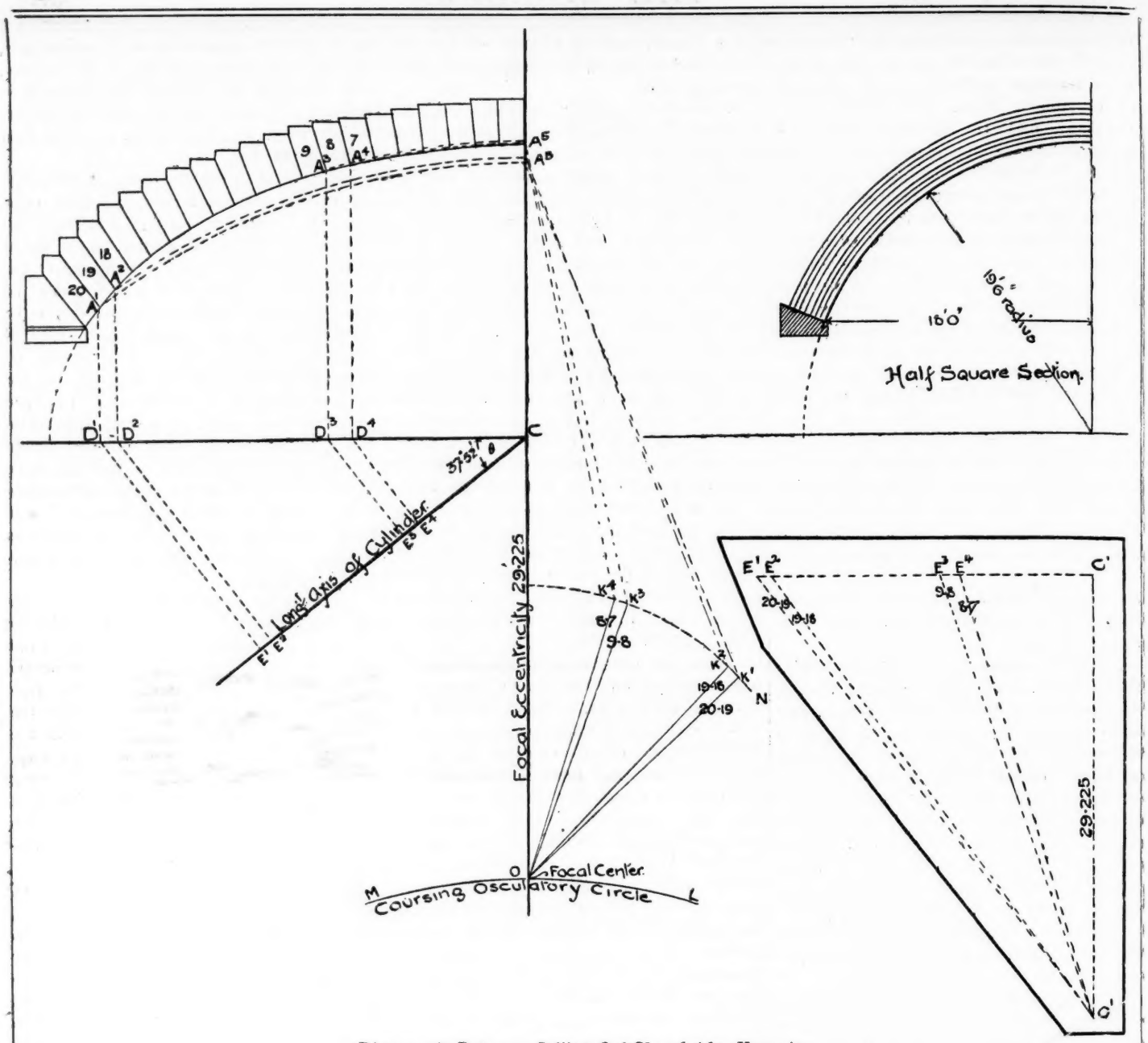


Diagram to Paper on Setting Out Skew-bridge Voussoirs.

equal to the radius of the cylinder, and the third is the true distance from E^1 E^2, &c., to O, and which is given in the side diagram; this length, of course, varies with each joint. It remains then to describe a triangle, of which three sides are now known.

With the centre O and distances OA^1 OA^2 OA^3 OA^4 describe arcs of circles A^1A^5, A^2A^5, &c. From O with a radius equal to the square radius of the arch describe an arc K^4N. From the four points A^5, and, with lengths taken from the side diagram equal to E^1O E^2O E^3O E^4O, strike out arcs to intersect K^4N at K^4 K^3 K^2 K^1; then the angles K^1OM K^2OM will be the face angles required.

H. H. H.

NOTES.

Preventive Measures against Fire in the City.

WE recently noticed that the Cripplegate street improvements were not to be taken in hand. This short-sighted decision of the authorities has been immediately followed by another warning in the form of a large fire in Tooley-street, where the destruction of a warehouse of considerable dimensions kept some couple of hundred firemen employed for many hours. Almost simultaneously with this fire we find, on the one hand, the Chamber of Commerce taking action with respect to fire protection by approaching the London County Council on various matters relating to the Building Acts, and on the other hand, we find that a certain section of the Corporation is showing its interest in the better protection of the City by calling upon their Engineer to report on a variety of subjects arising out of the Cripplegate fire. That the Chamber of Commerce should have taken the matter up is a sure sign of the dissatisfaction of those primarily interested in the question, *i.e.*, the City merchants and warehousemen, who are tired of being continually exposed to losses owing to the mere chance of a neighbour's house having taken fire. As regards the City Engineer's report on possible improvements in the City, we do not wish to touch on it until some action on the part of the Corporation may be seriously anticipated. When, however, we learn from this report that the City area, with its 27,000 houses, has only thirty-five public fire alarms, we cannot but point out that this is, perhaps, one of the defects which most urgently requires remedy. We need not go so far as in some American cities, where 27,000 fire alarms would be advocated for 27,000 houses, but we certainly hold that every block or every important crossing in the City area should have a conspicuous and automatic alarm, with such necessary indicators as to make them easily visible both by day and by night. A deficiency of conspicuous alarm posts simply means courting a second conflagration, quite irrespective of any questions of construction.

Overcrowding in Trains.

A NEW and very elaborate code of by-laws has just been submitted to the Board of Trade by the North-Eastern Railway Company, with the object of furthering the comfort and safety of passengers. The *Times* of Tuesday last devotes two columns to the reproduction of these by-laws, some of which are nominally in force at the present time, while others are amplifications of existing rules. One of the latter is a very stringent regulation dealing with the subject of overcrowding, and commences as follows:—"When a compartment contains the full number of passengers which it is constructed to carry, no additional person shall enter or remain therein if requested by any passenger therein or by a guard of the train or any duly authorised servant of the company not to do so." A decided innovation follows, it being provided that on failure to quit immediately upon being thus requested, the offender "may be removed by or under the direction of such guard or servant." This opens up a stirring prospect, and it remains to be seen

how the summary ejectment clause will work. By a singular coincidence, Tuesday's papers also report a case in which the Great Northern Railway have been suing a passenger who raised an objection to his compartment being overcrowded. He resisted the intrusion of excess passengers, and his efforts unfortunately resulted in the carriage window being broken. The judge, however, held that he was justified in what he did, and gave judgment in his favour. Under the circumstances, we should think that the company will hardly exercise the right they obtained to appeal against this decision.

The Scenic Deficiencies of Covent Garden.

AT the performance of the "Nibelungen Ring" last week, which was supposed to be on Bayreuth precedent, there was little to complain of as regards the orchestra, and many of the singers were superior to those who have lately been engaged at Bayreuth. But as regards scenery and stage effects we are still lamentably below the Bayreuth standard, although, of course, there were considerable improvements compared with what we were accustomed to under the ordinary management. That the mounting should have been, comparatively speaking, so weak, and this, although new scenery was painted both for the "Rhein-Gold" and the "Götterdämmerung," can be only ascribed to the lack of those mechanical contrivances without which no modern Continental stage is to-day complete. Many of the effects, too, although ingeniously contrived—such as the swimming of the Rhine maidens — were marred by the bad lighting of the stage, which, besides preventing any semblance of realism, led to many incongruities, and to ugly shadows being thrown on the backcloths. In the presentation of the "Walküre" at Bayreuth, the difficulties that would be encountered by the hero crossing in a "Wagner fire" can be well appreciated by the audience; at Covent Garden the whole effect of the music and acting was marred by a lack of reality, for it was obvious that any child could walk across what was here called "fire." We cannot dilate here on the many anomalies in the mounting of the "Nibelungen Ring" at Covent Garden, or the unbusinesslike hitches in the scenic arrangements, but we may call attention to the general mediocrity of the mounting as an object lesson, inasmuch as it showed plainly that, even with the assistance of Herr Kranich, the eminent Bayreuth stage mechanist, to superintend matters at Covent Garden, it is impossible to simulate nature if the foundation is not given in the form of practical appliances. The Covent Garden stage, besides being notoriously a source of considerable anxiety from the fireman's point of view, is too antiquated for modern requirements. The sooner it makes room for a new installation the better.

The Abuse of Power Houses.

IN a paper on "The Abuse of Power Houses," read to the Association of Municipal and County Engineers at Yarmouth by Mr. Preece, C.B., F.R.S., the President of the Institution of Civil Engineers, the common practice of having several central stations, where one would be sufficient, is strongly condemned. He points out that in a town where the Corporation supply the electric light and a private company manages the electric tramways, we may have the anomaly of two power stations side by side where one would not only be sufficient, but would lead to great economy in running costs. The remedy he proposes is that the Corporation works should supply the tramway company with energy as cheaply as the company make it for themselves, and so abolish the necessity of another power house, and probably greatly cheapen the price of the electric light. We quite agree with Mr. Preece in his remarks about the desirability of reducing the number of power stations, and allowing new ones to be built only where the smoke, condensed vapour, noise, and vibration inseparable from the working of a power station would be least offensive, and where their tall chimneys would not disfigure the view. In his description of the ideal power house, built on the side of a river where water is abundant and available for condensing, where coal can be delivered with the least cost, and where ashes and dirt can be easily taken away in barges, he seems to have had the Deptford station of the London Electric Supply Corporation in his mind. Now that a Joint Committee of the Lords and Commons have recommended that compulsory powers for purchase and for way-leaves for mains be granted to those who find it necessary, for public purposes, to establish their power houses outside their own area of supply, we hope that the legal difficulties which are in the way at present will soon disappear.

The Latest Gas.

Krypton (Gr. κρύπτω, "to hide") is the name given by Professor Ramsay to the gas which he has recently discovered as a constituent of the atmosphere. It is but a few years since argon and helium were added to the list of identified gases, and Professor Ramsay, whose name was associated with both discoveries, is to be congratulated upon his latest achievement. Beyond the fact that krypton is a hitherto unknown gas which undoubtedly exists in small proportions as a component of the air, very little is yet discovered about it; but it exhibits distinctive spectrum lines, and is believed to be an element. It is said that as far back as 1894 observers had detected the bands produced by krypton in the commingled spectra of certain atmospheric gases, at the time argon was undergoing rigorous examination; but the gas was not isolated, examined, and classified. The name "krypton" is not altogether a happy one, since the gas is no longer "hidden," and in common with every other element only remained hidden until the powers of human observation had become sufficiently developed to be able to recognise its presence in the matter around us. Until, however, the relationship which probably exists between the elements is discovered, a systematic elementary nomenclature cannot be made, and "krypton" will serve as a name quite as well as many of those already familiar in the ever-lengthening list of elements.

A Serious Danger in Swimming-baths.

THE case reported a few days ago in the daily papers, of the dreadful death of a poor lad in the Corporation Swimming-bath at Cheltenham, ought not to be passed over without special comment. The valve had been opened to empty the bath while it was still in use, and the poor youth in question was drawn by the outgoing current to the opening of the discharge-pipe and partly sucked into it. The coroner's jury returned a verdict of "accidental death," while censuring the caretaker for his neglect of the bath regulations (a verdict in our opinion very much short of what the circumstances demanded), and they also recommended the Corporation to have a grid placed over the waste water conduit. It would be better for some reasons to have a grid over it, no doubt, but that would not prevent a similar accident; the suction of the water would hold a swimmer down against the grid, and drown him just as certainly. It is a very serious matter that people using a swimming-bath should be exposed to such a danger by the mere carelessness of an official.

German Criticism on the Underground Railway.

THE *Wiener Bauindustrie-Zeitung* for June 9 contains a long and interesting article on the London Underground Railway. The difficulties encountered in the work and the generally successful surmounting of them are appreciatively described. The following little piece of adverse criticism, however, is not uncalled for:—"The stations externally are not well distinguished from neighbouring buildings; a soot-blackened inscription alone marks their character. For example, the station at Westminster Bridge is approached by a narrow entrance, from which a long corridor leads to the booking-office. On the right hand is the great show window of a baker's shop, so that a stranger entering the station for the first time is in doubt as to whether he is on the right road. At another station the board bearing the name is quite hidden beside a gigantic inscription that, with four lines, covers the front of a five-story building and sets forth in gilt and far-shining letters the fact that in that building are the headquarters of the Salvation Army."

City and Guilds Institute Exhibition.

THERE is on view this week, at the Imperial Institute, a collection of the works executed by students in the various crafts for the certificates offered by the City and Guilds of London Institute in their yearly examinations. In nearly all the examinations, there is the double test, practice combined with theory; and the craftsmen have also to pass an educational examination in the technology of their craft. Among the works on view are found specimens of carpentry and joinery, cabinet-making, metal plate work, plumbers' work, bookbinding, weaving in various fabrics, and the usual complement of mediocre work done by persons qualifying as manual instructors in elementary schools. In all, over 13,000 students were examined in the various subjects. Specially interesting to our readers will be the models of carpentry and joinery, executed in many instances with considerable skill; staircases, domes, turrets, vaulting, skylights, panelling are among the subjects taken in hand. As on former occasions, wherever the candidate has been left to design something more than an ordinary door, the result has not been satisfactory; it seems impossible to hope for much in this direction, and we must be content with work which is well executed in itself, without reference to design. The exhibition is interesting as showing the output of educational work in this direction, and the general

level of the exhibits is, if anything, above that of previous years. The Institute is certainly to be congratulated on the results, although much still remains to be done to bring the various arts, crafts, and industries of the kingdom into line with those of other nations.

Bilton Hall, Warwickshire.

AN interesting collection of old furniture, needlework, &c., and family portraits, from Bilton Hall, will be sold at Christie's next week. The collection belonged to Addison and his wife, the Countess of Warwick, and, it is said, was for the greater part removed from Holland House, Kensington, to Bilton Hall. The pictures include portraits of Charles I. and his equerry, by Vandyck and Stone; Prince Rupert, Prince Maurice, and the Earl of Holland (beheaded in 1649), by Vandyck; Addison and his daughter (in her childhood), by Kneller; the Countess of Warwick, her father, Sir Thomas Myddelton, of Chirk Castle, Denbighshire, and her son, the Earl of Warwick; Secretary Craggs, who gave Addison some Spanish acorns from which he reared oak saplings at Bilton; Dryden, Lord Halifax, and George Villiers, Duke of Buckingham; and a miniature on enamel of Addison, by Zincke. Addison bought Bilton Hall for, we read, 10,000*l.*, from William Boughton in 1711, five years before his marriage, and there he passed the greater part of the close of his life. After the Countess's death the property was inherited by their daughter, who resided there until her death in 1797, and was buried in the parish church. She devised the Bilton estate to the Hon. John Bridgeman Simpson. Of late years it has belonged to Mr. G. H. Bridgeman. Her father's library, to which she succeeded, was sold at Sotheby's in 856 lots, in May, 1799, for 456*l.* 2s. 9d. Bilton Hall, which is often confused with the neighbouring Bilton Grange, rebuilt by Pugin, is distant one and a half miles from Rugby, and near Dunchurch, in the country of the Gunpowder Plot. It was erected, it is supposed, in 1623, a date inscribed above the porch. The gabled main front has not suffered much change. Mr. Bridgeman Simpson modernised somewhat the garden side, and rebuilt a gable; but the tall elms, and the gardens of Addison's time, in their old formal style have, it seems, been carefully preserved. Bilton and Dunchurch were granted, *temp.* Stephen, to Pipewell Monastery, in Northamptonshire. The Grange stood on the boundary between the two parishes.

The Paris 1900 Exhibition.

M. HENRI BOUCHER, the Minister of Commerce, has submitted to the President a Report on the state of the works for the 1900 Exhibition. A comparison between these and the works for the 1878 and 1889 exhibitions shows that the works in the present case are relatively more forward than in the case of either of the former exhibitions, and that none of the buildings to be erected present so much difficulty of execution as the Galerie des Machines and the Central Dome of the 1889 Exhibition. The partition of spaces intended for the foreign exhibitions on the Esplanade des Invalides has now been arranged, and in consequence the Champ de Mars is now "interdit" to the public, and direct communication between the 7th and 15th Arrondissements cut off. In order to get over this inconvenience, an engineer, M. Edoux, has proposed the formation of a subterranean passage to traverse Champ de Mars from east to west, and unite Avenue Suffren with Avenue La Bourdonnais. It is proposed that it should be lighted by electricity, and that closed vehicles should transport people from one point to another, at a charge of five centimes. The cost of the work is estimated at 100,000 francs, and the road is to be converted for a sewer after the close of the exhibition. The scheme has been submitted to the Municipal Council. The Paris people seem to be making this exhibition quite a yoke upon their necks, for the time being. It is to be hoped the result will repay all these inconveniences.

Dudley Gallery Art Society.

THE summer exhibition of water-colours and sketches of the Dudley Gallery Art Society contains some very good work among a considerable amount of mediocrity. Mr. Topham Davidson's "Summer Time in the Scilly Isles" (279) is a remarkable study of calm sea under bright sunlight, and ought to have been better hung, instead of being placed close to the door where people are liable to pass it by; but perhaps it was necessary to keep it out of the way of the President's sea pictures. If the Society could enter into a bargain with their President not to exhibit it would be better for the exhibitions. Generally speaking, the really good works are some of the small and carefully studied landscapes by Mr. G. Marks, Mr. F. C. Coleridge, and others, and some of the freely-executed sketches and studies by a group of clever lady artists who have exhibited there for three or four years back—Miss Margaret Bernard and Miss Rose Douglas especially. Another lady, Mrs. Bessie Johnson, exhibits a quite admirable picture of "The Sphinx" (174) in strong sunlight. An exhibitor whose name we do not before recall, Mr. Duassut, has some excellent works, especially "Near Chiddingstone" (222), and Mr. David Green's sketch entitled "Spring Time" (229) shows the broad and certain handling, in a rapid sketch, which comes from certainty of observation and of method.

Minor Exhibitions.

AT the Dutch Gallery, 14, Brook-street, is a small collection of pictures, chiefly French and Dutch, among which are some fine things: A beautiful little landscape by Rousseau, "After the Storm," also a black and white study by the same painter; two or three good works by Maris — a small oil sketch "The Towing Path," with a foreshortened horse in the foreground, is very good; a fine landscape by Mauve, "The Moor"; and an interior of a cow-house, "Milking Time," by Mr. Edward Stott, which is a very interesting and original piece of work. There is also a forest scene by Diaz, which however strikes one as rather more Diaz than nature. At "The Studio," Beaumont-road, close to West Kensington Station, two English lady artists, Miss A. Robertson and Miss C. F. Costerton, who have been for some years working together in Paris, have opened an exhibition of their joint works for a few weeks, which will be found interesting. Miss Robertson's portraits display a good deal of originality in feeling and colour; there are also some landscape studies showing a great deal of feeling for effect and a certain individuality in the way of looking at things. Miss Costerton devotes herself mainly to miniature painting, and her works of that class are of high merit.

ARCHITECTURE AT THE ROYAL ACADEMY.—III.

DOMESTIC architecture is rather largely represented among the drawings at the Academy. There are houses, some of them tolerably large ones, designed in a serious manner; there are some small works of special and picturesque character; and there are those which, though illustrated as modern buildings, have too much the appearance of being drawings of old ones. Mr. Arnold Mitchell's "House at Milford-on-Sea" (1597), comes to a certain extent under the latter category; it is a beautiful specimen of effective drawing and tinting, but the whole handling goes to give it an appearance of the texture and weathering of an old building, and the details are mostly familar in old buildings of a certain date. A new house can hardly in reality look as this does in the drawing. A plan is given; its characteristic is a hall larger in proportion to the size of the house than is usual, but this is no bad way of treating a moderate-sized house. To have the drawing-room door exactly opposite the door which leads not only to the entrance vestibule but also to the gentlemen's lavatory is not quite the best arrangement, but in the main the plan is a good one. Mr. Edgar Wood's "House at Middleton" (1675-6) again looks too much like a sketch of a rather dilapidated old house; Mr. Baillie's Scott's "Proposed House at Douglas" and Messrs. Ernest George and Yeates's "Okewood" (1,609), have the appearance of old manor-houses, and Mr. Brierley's "Design for Stables" (1,745) might be entitled "Old Farm Buildings at —-." They all make very pleasant drawings, but the effect is rather factitious, nor can we see any particular advantage in giving this air of antiquity to a modern house. All the old houses looked new once.

The two largest houses illustrated are Mr. Aston Webb's "Hildon House, Hants" (1,767), illustrated in our present issue, and Mr. Belcher's "House at Pangbourne" (1,752, 1,753, 1,708). Hildon is a very pleasant-looking quiet house surrounding three sides of a courtyard, and has some of the characteristics of houses of an older date without actually imitating them in a deceptive manner. We are enabled to give the ground plan, which is not given on the exhibited drawings, and a few words of explanation from the architect, to be found under the head of "Illustrations." Mr. Belcher's "House at Pangbourne" rather illustrates what we have remarked upon before as to the want of the element of dignity in modern large houses; this is a symmetrically designed house as far as the front here shown is concerned, but it is not dignified; it is too much broken up for that—with intention no doubt; the preference now is for the picturesque rather than the stately element in a dwelling-house, but we rather doubt if there will not be a reaction presently in favour of stateliness. The interior of the entrance hall is shown in No. 1,752; an apartment with a cross-vaulted roof with the surface of the vault covered with strap-work decoration in the Elizabethan manner; this breaks round the meeting edge of the vault, without any moulding or groin rib, in a manner which is piquant, but gives rather a ragged line. No. 1,768 is a fine bold line-drawing of the entrance tower of the same house.

In "Design for a New Church, Caerhûn, Conway" (1,601) a little drawing which escaped our notice when going through the churches, Mr. H. L. North shows in small coloured geometrical drawings a very nice design for a small country church, proposed to be built of local gray granite and white Penmon stone; the plan shows two aisles with a central arcade, the chancel arch being apparently a double one at an angle of 45 deg. each way from the terminating pier of the arcade. A perspective sketch of the church is shown in No. 1635; the two should have been placed together. In "Proposed Hotel, Churston" (1,602) Mr. Carvill shows a small hotel design which has the merit of being free from the meretricious display so common in hotel architecture; this is a coloured elevation showing brickwork wings with plastered gables, and the connec-

ting wall also in plaster, for cement: white at all events. In the little drawing of "A Country House at Sutton" (1,612) Mr. E. Runtz shows character, and adds a plan with a compass (often omitted); but we may observe that south is not a good aspect either for a dining-room or a billiard-room. Mr. Street's "Design for a Country House" (1,617) is quite the old style of thing, perhaps intended as a protest against the picturesque vagaries of the day; a square mass of brickwork with a projecting bay a little way from each angle; the plan shows that the principal rooms are well arranged as to aspect. Messrs. Clark and Moscrop's interior of "Gallery and Ball-room Yorkshire" (1,620) shows a dignified room with a large undecorated cove at the base of the ceiling, supporting a clearstory and a decorative ceiling; there seems rather a want of some appearance of constructional capability in the cove to carry all this; the side of the room is broken by two round-arched recesses, with good effect.

Mr. R. W. Schultz's "A London Garden, St. John's Lodge, Regent's Park" (1,622) is a rather curious affair; a bird's-eye view of a formal garden with two successive circular compartments formed by clipped hedges, the nearer one gay with the colour of flowers. This is one of a class of drawings which have only recently found their way into the architectural room—an indication of the revived interest in formal gardening. Of the same class is Mr. Inigo Thomas's drawing of "The New Playing Fields, Eton" (1,642), also a bird's-eye view, showing the playing fields laid out somewhat like the environs of Hampton Court; long alleys between the fields, expanding at regular distances into open spaces or squares, placed diagonally to the line of the alleys, and each with a fountain in the centre. Thus is the march of æstheticism invading the school playground. Mr. Thomas's other contribution, "Rotherfield Hall, Sussex" (1,649) is a still more curious one, a small coloured view or rather elevation of a house seen in the distance, while the greater portion of the picture space is occupied by a large arabesque border which seems to be the primary object of the drawing; the whole thing looks rather like a joke.

We come to a series of rather curious but interesting small drawings in this part of the room. Mr. G. L. Morris's "Proposed Country House near Northampton" (1,627) shows a prim little elevation in red brick and cement (probably), with an entrance doorway variegated with bands of different material, and a plan of ⌟ shape, in which the "hall" takes the shape of a long corridor parallel with the front wall; there is no drawing-room (or no room called by that name); no compass is given, so that we can form no idea as to the aspect of the rooms. The bedroom plan is an odd-looking one too, but very compactly arranged at any rate, and there is considerable individuality about the whole scheme, shown though it is in small and inadequate drawings. Mr. Walter Cave's "Proposed New Front, 40 James-street" (1,634) is a small coloured elevation of still more marked character. It is very carefully done, and represents a front of green bricks with a white-painted projecting bay running up through three stories in the centre of this *fond* of green brick, with a cornice at the top, above which the gable is apparently of light-coloured stone, very plainly treated. On each side of the upper part of the bay, beneath the cornice, is a basrelief panel. Altogether this is a very original little drawing. Near this is Mr. Skipworth's curious collection of a series of small drawings of an "Artist's House" (1,630, (1,636), done on brown toned paper with the plastered portions of the walls put on in white body-colour, a little "dodge" which has rather invaded the Academy of late, and which gives a piquant effect to a drawing with little trouble. The two sheets consist of a series of small perspectives both of interiors and exteriors of the house, and very small plans with no names to the rooms, so that they do not tell one very much. Nor is it possible to form much idea from these little sketches as to how the detail is to be treated. Nevertheless, this is an interesting and suggestive exhibit.

PARISH CHURCH RESTORATION, SOUTH QUEENSFERRY.—Plans for the reconstruction of the interior of South Queensferry Parish Church have been prepared by Mr. M'Gregor Chalmers, architect, Glasgow, and have been approved of and signed by the Presbytery, heritors, and kirk-session.

THE ACETYLENE EXHIBITION.

THE exhibition of acetylene gas generators which is now being held at the Imperial Institute is the first exhibition of any importance in connexion with the acetylene industry which has been held in England. The exhibition is divided into two sections, the one within the north gallery being devoted to appliances not at work, whilst the other, which is very close to the first section, is outside the building, and shows a number of generators at work. The acetylene produced by these working generators is led into the building containing the Cape Colony and other colonial exhibits, and is there burnt in 7-light chandeliers. The total acetylene consumption of one of the 7-light chandeliers is said to be about 5 cubic ft. per hour when all the burners are in use, whilst the light emitted is remarkably white and is of such brilliancy that neighbouring incandescent electric lamps and ordinary gas jets appear dull and yellow in comparison. It is worthy of note that, although the price of carbide in bulk has been quoted at 16*l.* per ton, the retail price per 1 lb. tin is sixpence. There are twenty-five to thirty different forms of generators on view, and many of them are sufficiently simple to be manipulated by any servant of ordinary intelligence, after a preliminary explanation as to how the apparatus works. A good generator will yield about 5 cubic feet of gas per lb. of calcium carbide consumed.

Notwithstanding the fact that it is almost universally admitted that purification of the gas before use would be very beneficial, few exhibitors make any attempt at purification. As one of the few exceptions, Messrs. Thorn & Hoddle's "Incanto" apparatus may be mentioned.

In the manufacture of acetylene, steam is often generated, owing to the heat produced by the reaction of the water upon the calcium carbide, and it is a matter of importance, not sufficiently recognised among the exhibitors, that some means of condensing and withdrawing this should be provided; otherwise an unsteady "jumping" flame is likely to result, owing to the condensation of water within the service pipes.

In selecting a generator the principal points to observe are (1) the heat developed within the generator during manufacture of the acetylene, (2) simplicity of construction, (3) facilities for withdrawing the spent charges of hydrate of lime, (4) where necessary, the arrangement for condensing and withdrawing condensed steam driven off with the acetylene, and (5) the purification arrangements. Few, if any, of the generators exhibited can be said to satisfactorily deal with all these points; nevertheless, many are sufficiently good to form a safe and simple apparatus for the manufacture of acetylene, and to afford a ready means of lighting country houses with the new illuminant.

With regard to the burner, the most important matters to look to are the illuminating value, and the length of time the burner can be used without becoming choked with soot. The burners in use at the exhibition are Naphey burners, and although this burner is not entirely satisfactory, it is, perhaps, the best yet on the market.

Provincial towns, such as Manchester and Birmingham, are well represented, and Scotland also is in evidence; in fact, the exhibition shows that all over Great Britain considerable activity has been displayed in the manufacture of acetylene appliances, and the capital which has been invested in connexion with acetylene already amounts to several millions of pounds in this country alone.

Cyclists will be interested in the exhibition of acetylene cycle lamps, and the solitary acetylene motor bicycle which, however, is unfortunately not one of the working exhibits.

The exhibition is well worth a visit, and architects and builders especially will do well to avail themselves of the opportunity of seeing the plant and appliances used for lighting residences and public buildings with an illuminant which is rapidly gaining in popularity, and is particularly suitable for the lighting of country mansions. The exhibition is open daily from 11 a.m. to 1 p.m. free, and from 1 p.m. until 11 p.m. the entrance fee is 1s. On Wednesdays it is only open to Fellows of the Institute. The exhibition will be open until August 31.

NEW CLOCK, UPPINGHAM.—A large clock with quarter chimes has just been erected in the parish church of Uppingham, by Messrs. John Smith & Sons, of Derby.

THE ROYAL ARCHITECTURAL MUSEUM AND WESTMINSTER SCHOOL OF ART.

THE annual general meeting of the Royal Architectural Museum and Westminster School of Art was held on Friday last week at No. 18, Tufton-street, Dean's Yard, the Duke of Westminster, President, occupying the chair.

The minutes of the last meeting having been read and confirmed, the President and Vice-Presidents were re-elected on the motion of Sir A. Blomfield, seconded by Mr. J. H. Pollen.

The Chairman, in thanking the meeting for his re-election, said he considered it an honour to do anything in his power to second the efforts of the Committee in keeping up the reputation of the Museum and School of Art as a whole. He had little doubt that the recent addition to the accommodation of the school and the consequent opportunities for the development of its work would increase its popularity and fame as one of the most successful centres of art teaching to be found in the United Kingdom.

The Curator, Mr. Francis Ford, then read the annual report, the principal parts of which we give herewith:—

"The Council of the Royal Architectural Museum and Westminster School of Art, in presenting their report for the year 1897, desire in the first place to record with deep regret the loss the Museum has sustained by the death of three of the oldest subscribers—Sir Frederick Leighton, Bart., President of the Royal Academy; Mr. J. L. Pearson, R.A., F.S.A.; and, more recently, Sir Thomas Dyke Acland, Bart. The earnest and enthusiastic band of men, who, in their love for Gothic architecture in its best and purest forms, founded and maintained the Museum in its earlier years, is indeed fast diminishing, and at present there is no sign of the ranks being filled up either by members of the architectural profession or by the general public. The Council, however, are confident that the superb collection of examples committed to their charge, and preserved intact for nearly half a century, will in course of time meet with renewed appreciation and pecuniary support, especially from those to whom its excellence more particularly appeals.

The year has been a notable one in the history of the institution, inasmuch as it has been found possible to make, at a very considerable outlay, a most useful and substantial addition to the accommodation required for the Westminster School of Art, and incidentally to free the central hall of the Museum from studies which were to some extent out of harmony with their surroundings.

The buildings referred to in the last Annual Report have been completed and partially occupied, and are now being equipped and fitted with the electric light. Four commodious class-rooms have thus been added to the accommodation devoted to the school, and it is hoped that the consequent opportunities for the development of its work will increase its popularity and fame, as one of the most successful centres of art teaching, especially in its advanced stages, to be found within the limits of the United Kingdom. This was evidenced by the result of last year's examinations, for in the most advanced subject (drawing from the life), no fewer than 61 candidates were presented from this school, of whom 22 obtained second-class certificates, 29 first-class certificates, and 8 "excellent," (the highest award), there being only 2 failures! . . .

The contract for the new class-rooms, which have been built by Messrs. Lathey Bros., from the designs of Messrs. Lee & Pain, architects, was 2,322*l.* The building is heated by hot-water apparatus fitted by Messrs. Haden & Sons. . . . The total expenditure on the new building is brought to a total of about 2,850*l.*

The balance of the amount already paid (about 1,530*l.*) has been provided from the funds of the Museum, which have happily been able to meet this exceptional outlay, but further donations towards the balance of liabilities will be most acceptable. The favourable condition of the finances is mainly due to the success of the School of Art, which thus repays in its prosperity the expenditure necessary to its maintenance during its earlier days, when it owed its establishment and existence to the fostering care of the Museum. It is satisfactory to know that it will in the coming autumn resume its operations with a fair prospect of a long career of increased usefulness and success."

Mr. Aston Webb proposed, and Mr. J. P. Seddon seconded, the adoption of the report. This having been agreed to, the Council, hon. treasurer, and auditors were re-elected on the motion of Mr. C. F. Hayward, seconded by Mr. S. W. Lee.

The Chairman having responded to a vote of thanks proposed by Mr. W. Paine, the meeting terminated.

MEMORIAL WINDOWS, ILKLEY.—The Bishop of Richmond recently dedicated two stained-glass windows which have been placed in Ilkley church by Messrs. James Powell & Son, of Whitefriars, London.

THE LUXFER PRISMS.

THIS is the name given to a system of glazing which has been patented in this country by the "Luxfer Prism Company," the American company whence the invention comes having their head office at The Rookery, Chicago. The system also includes patents with regard to pavement or floor lights. The floor or pavement lights are somewhat of the same nature as those our readers are familiar with in this country, with, of course, some special improvements claimed by the new company. It is mainly to bring to the attention of our readers the new method of glazing upright sashes that this notice is written, as also a new system which is adopted in fixing the squares of glass.

The company have a warehouse in Hill-street, Finsbury, which is divided into several portions on the ground floor, one of which has two windows facing Hill-street, each glazed with one square of plate glass. This room is narrow and of considerable depth, and when standing at the end furthest from the window, the place is gloomy, to say the least of it. Casement sashes are fitted to the window inside the plate glass, these casements being glazed with Luxfer prisms; when these are closed in front of the ordinary glass the place is very considerably lighter, so much so that we were able to read the advertisements of the company when standing at the end of the room furthest from the window, and this on a very dull, wet day. The matter is easily explained by recollecting that the angle of the prisms or serrated face of the glass on the inside is arranged so that the rays of light shall be refracted in straight lines towards the furthest end of the room.

Some may be of opinion that shadows will be thrown the whole length of the room, by any solid objects therein, and to some extent this will be the case, and we can only advise those of our readers who require more light to examine the invention and judge of its merits for themselves. Canopies or reflectors, so called (a more accurate name would be refractors) for fixing outside windows are also made.

The method of glazing adopted is ingenious, and is as follows:—The squares of glass are accurately ground, so that they shall be exactly 4 in. each way, the desired number are then laid out on a bench and an external frame of very light ⌊ copper fitted round the margin; each square is laid in position, having strips of copper about $\frac{1}{32}$ of an inch thick between. When the whole area is made up in this manner a few of the angles have a drop of solder put on, and the slab is lifted up and placed vertically in an electric bath composed of copper in solution, copper wires being hung from rods which form one of the poles of a dynamo machine, and the slab hung from rods forming the other pole. The machine, which is of low tension (4 volts) and large output, is then started, and copper is deposited on the copper strips, which increase in size until they slightly overlap the small teeth in the face of the glass, and also any open spaces there may be between the strips and the glass. After a time the deposit is complete, and we have an area of glass firmly held together by strips of copper so narrow as not to be any practical obstruction to the light. This, of course, is only a general outline of what can be done by the process.

The company have compiled a most useful handbook for architects, giving details to scale of various methods of constructing "canopies," &c., in iron, and full instructions as to the best prisms to use under varying circumstances.

THE INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

AN Eastern Counties' District meeting of this Association was held at Norwich and Great Yarmouth on Friday and Saturday last week. The members met at Norwich in the Council-chamber at the Guildhall on Friday afternoon, the Mayor (Mr. C. C. Rix Spelman) taking the chair at the commencement of the proceedings. Among those present were Messrs. A. E. Collins, Borough Surveyor, J. T. Eayrs (Birmingham), J. W. Cockrill (Great Yarmouth), E. J. Silcock (King's Lynn), R. M. Gloyne (Eastbourne), J. Lobley (Hanley), E. G. Mawbey (Leicester), J. Price (Birmingham), N. Scorgie (Rotherhithe), A. D. Greatorex (West Bromwich), J. Parker (Nottingham), J. S. Pickering (Nuneaton), E. Buckham (Ipswich), J. Mann (Sevenoaks), J. P. Barber (Islington), L. P. Marshall (Resident Engineer, Norwich Sewage works), O. E. Winter, W. H. Leete, and others.

The Mayor having welcomed the members,

Mr. J. T. Eayrs, Past President, took the chair, and apologised for the absence of the President, Sir A. Binnie. In the course of his remarks he said that in the past the death-rate of Norwich had been rather high, and from its ancient character there was, no doubt, a great deal of sanitary work to be done. He desired to move a vote of thanks to the Mayor and Corporation for their hospitality.

This having been carried, and the Mayor having replied,

Mr. A. E. Collins then read a paper dealing with some of the municipal works of the city, in the course of which he said:—

"During the past few years considerable lengths of ancient sewers had been put out of use. Generally they were built with walls and flat bottoms constructed of flint in lime mortar, and covered with brick arches. Some fifty years since extensive sewerage works were constructed, the sewers discharging into the river, with the result that the river got exceedingly foul. A main outfall sewer, with branches, was constructed some thirty years since to intercept the old sewers, and deliver the sewage to a main outfall sewage pumping station, constructed at the same time, at Trowse. From this point the sewage is pumped on to a sewage farm having a total area of 503 acres, 268 of which are available to receive sewage. The land is irrigated with raw sewage, no precipitation, filtration or other process being used. The farm is satisfactorily let. When the main outfall sewer was brought into use thirty years since, it was found to be so leaky as to make it practically impossible for the three powerful beam pumping engines at the outfall to keep the sewer pumped down. Had iron construction been adopted at that time, the new scheme now in progress would not have been required, excepting as regards the newer parts of the city. The Corporation consulted the best engineering talent of that day, with the result that the most leaky portions of the sewer were lined with iron. Whilst the lining itself was watertight, the total amount of leakage was not materially decreased by it, as when the water was dammed out at one place it found its way in at others, more especially at the junctions of iron linings with the unlined brickwork, and whilst many devices were tried to overcome this, none were successful. As the ultimate result the then City Engineer (Mr. P. P. Marshall, who took office after these difficulties had arisen) advised—1. The construction of a new main outfall sewer at a higher level than the old one, and the abandonment of the old one. 2. The adoption of the Shone system for raising the sewage of the low-level districts into the new main outfall sewer. 3. The re-drainage of the whole of the city on the separate system. The undertaking contemplated being of a very extensive character, the Corporation obtained its act of 1888, giving them powers to do the necessary works, including the construction of air mains beneath the streets, and borrowing powers to the extent of 80,000*l*. The works were then put in hand under Mr. Marshall's direction, and carried on by him until his resignation of office; they were continued by the late Mr. Buchan until his resignation, and since by the author. Throughout, Messrs. Shone & Ault have been the Consulting Engineers as regards the ejectors, air and sealed mains and air compressors, which have cost about 25,000*l*. out of a total expenditure, which at completion will reach about 164,000*l*. Until about two and a half years since the works were carried on by men in the direct employ of the Corporation; since then contracting has been resorted to, excepting in the cases of certain difficult works where the amounts contractors would of necessity have to charge to cover risks would be large. In these cases the works have been done by the Corporation staff. The contractors have been Messrs. Hughes & Lancaster, of Westminster, for the ejector stations, air and sealed mains, and air compressing machinery; Messrs. Monk & Newell, of Liverpool, for the sewers in the western low-level district; and Messrs. B. Cooke & Co., of London, for one high-level and four low-level districts.

The new main outfall sewer is constructed of circular concrete pipes surrounded with cement concrete, commencing with an internal diameter of 3 ft. 6 in. At the outfall its invert is 5 ft. below the line of saturation. Otherwise, excepting in the case of pipes across the river, the whole of the sewage sewers are constructed of circular stone-ware pipes, which are jointed on Parker and Hassall's system beneath or near the line of saturation, and in all places where special care is required. This joint was adopted after trials of various systems of joints, including one devised by the author at the suggestion of Mr. Ault. Leaks are easily located before the pipes are covered, by filling the pipes with air under pressure, and painting all the joints, &c., with soapy water, when the most minute leaks will reveal themselves by the formation of bubbles. The sealed mains consist in almost all cases of cast iron, socketed, lead-jointed, pipes. They are for the purpose of conveying sewage from the high levels on one side of the valley, through which the river runs, to the new outfall sewer on the other side of the valley; they also receive the pumpage from the ejectors. Each of these sealed mains forms an inverted syphon, dipping, in the case of the 24-in. pipe crossing the Wensum at Fye Bridge, to the extent of 16·75 ft. below the hydraulic gradient, and, in the case of the 12-in. pipe at Carrow Bridge, 14 ft. below the hydraulic gradient. To ensure cleansing velocities, through these deeply inverted syphons, almost the whole of the sewage passing through them is delivered in concentrated flushes, that from the high levels by the aid of automatic flush tanks, that from the low levels by the ejectors. Two of these inverted syphons have been at work for several months without any trouble arising, except as regards the sufficient ventilation of the pipes between the water level when not discharging and the flush tank or ejector inlets. What he considered sufficient ventilation was provided by the author, but he had to materially increase it before obtaining sufficient velocity of discharge from the automatic flush tank or ejector as the case may be.

For the construction of the sewers across the river at five points, comprising nine actual pipe crossings, various methods were adopted as circumstances dictated. At Carrow Bridge, where the river is crossed by a 12-in. sealed main, a 7-in. low-level gravitating sewer and a 3-in. air main, advantage was taken of the old low-level branch sewer, 30 in. in diameter, to receive the three new pipes. The old sewer was too small to admit of the joining of pipes within it; moreover it was not straight, either horizontally nor vertically. The work was done as follows:—A trench about 12 ft. long was sunk down to the old sewer on one bank of the river, and a working shaft about 7 ft. square on the other bank, and the arch of the sewer removed at each end. The pipes were lowered into the trench and jointed at the bottom. The whole of the pipes were steel, lap-welded; the joints of the 12-in. and 7-in. pipes were spherical, the sockets being of steel bored to spherical shape, the male ends were faced, turned to a narrow chamfer at the extreme end, and provided with three grooves to hold the jointing lead. Two pipes having been put in position for jointing and tightly forced together with a screw jack, the joint was run with lead, and caulked tightly between the outside of the cylindrical male end and the inside of the spherical socket. The joints of the 3-in. steel air mains used at this point were made with ordinary screwed sockets, with back nuts and gaskets at each end of each socket to ensure air tightness. The joints having been made on a section, and the pipes bundled together in faggot fashion, they were drawn into the old 30 in. iron sewer beneath the river by means of a chain attached to the shoreward end of the pipes, and passing from thence through the 30 in. pipe to a crab fixed at the bottom of the working shaft at the opposite side of the river. The bundle pipes having been drawn a pipe length into the old 30-in. pipe, the cycle of operations was repeated until the three pipe lines were completely laid across the river. After this the pipes were tested, when it was found that, notwithstanding the fact that at one half of the joints flexure had occurred in at least three directions after the joints had been made, and that at all the joints some flexure had taken place, all of the joints were quite free from leakage and the pipes throughout water or air-tight, as the case might be. At times the force required to move the pipes was so great that an hydraulic jack was required to push whilst the crab pulled. At Foundry Bridge advantage was taken of the existence of the old low-level sewer crossing, which consisted of an iron pipe 6 ft. internal diameter. The size available made constructional work comparatively straightforward at this point. At Fye Bridge a 24-in. sealed main inclining from north to south, and a 9-in. gravitating sewage sewer from south to north, had to be constructed beneath the bridge and below the navigation depth of the river. This work had to be done without stopping the bridge for traffic or the river for navigation excepting during a limited number of hours, and was effected as follows:—Steel pipes 30 ft. long (the span of the bridge being 33 ft.) were obtained; at both ends of this pair of pipes wooden yoke pieces were attached in such a manner as to secure the pipes in their proper relative positions to each other; the joints between the yoke pieces and the pipes were caulked so as to be watertight, the sides of the yokes were grooved to receive the sheeting planks of a coffer dam, and to their tops doors were hinged; such doors afterwards formed parts of the coffer dams. The pipes having been prepared in this manner, they were floated upon a pontoon beneath the bridge and slung from the bridge, by means of proper tackle, above a trench which had previously been dredged to receive them. The pontoon was then floated away and the pipes lowered on to the dredged bed. Up to this time the doors above mentioned were lying horizontally upon the pipes, this being necessitated by the limited head-room beneath the bridge. When the pipes had been lowered the doors were raised to the vertical position, the position of the pipes accurately adjusted by the aid of marks previously placed upon the doors, and the pipes

covered with concrete. Coffer dams were then driven in continuation of the small portions of such dams formed by the doors and yokes. The driving of the piles had to be effected to a great extent by means of hydraulic jacks which abutted against the under side of the bridge. Shafts were then sunk at the landward end of both abutments, and headings driven beneath the abutments into the coffer dams. This work had to be carried out at such a depth as to be in parts below the points of the piles supporting the bridge abutments. A manhole was built at each end of the river length; through these manholes the pipes are carried in special castings provided with large access doors to enable blockages to be dealt with should they occur. Blow-outs and stop-valves are also arranged on the up-stream side of each of the deepest dips to enable the pipes to be to a great extent emptied without pumping. These precautions were taken with the whole of the inverted syphons excepting that from No. 5 ejector near New Mills, where the dip is comparatively slight. Along many miles of route both surface water and sewage sewers have had to be provided, the old combined sewers being from one cause or another unsuitable for retention as surface water sewers. Through nearly the whole of this length the sewage sewers are required to be much deeper than the surface water sewers; the former are invariably constructed of pipes, and the latter partly of pipes, but to a great extent of brickwork in cement. In all cases the trenches are excavated in such a way as to accommodate both sewers in one trench, the trenches being got out wide enough for both sewers to the depths necessary; for the shallower sewer a benching is then left, and a narrower trench carried down for the deeper sewer. In consequence of the nature of the soil and the precautions taken, no disturbance or settlement of either of the shallow sewers has been noticed excepting in one short length, notwithstanding the fact that the deep trench is not refilled with concrete, but only with selected excavated material. The special precautions taken have been to select the most suitable excavated material for refilling purposes, to have it well rammed, and where the work is beneath the line of saturation (as it mostly is) to allow the water to rise before commencing to lay the shallower sewer. Where the work is being carried out above the line of saturation a plentiful supply of water is used to assist consolidation. It was in consequence of a neglect of this precaution that the only disturbance of one of the shallower sewers above referred to occurred. The difficulties arising from the attempt to carry out the separate system in this ancient and irregularly built city were found to be so great, and likely to lead to such an enormous outlay, that the author soon after his appointment advised that, excepting in the low-level districts drained by means of ejectors, and in new buildings and new building estates, the separate system be not proceeded with for the time being, but that the then existing combined sewers be intercepted at suitable points in such a manner that sewage and storm water up to a sufficient dilution should pass into the sewage sewerage system, and after the pre-arranged amount of dilution had been exceeded the whole flow should pass to the river, which, where any of the storm overflows exist, is tidal, and below the New Mills weir, which in its turn is some distance below any waterworks intake. The Council accepted this proposition, and since that time the works have proceeded on the lines recommended. Whilst the author upholds the separate system of sewerage as the best one extant, yet the complications and expenses are so great in cases similar to that he is dealing with in Norwich that he feels he is perfectly justified in the departure from it he has made. For the drainage of the districts lying below the levels commanded by the new main outfall sewer, six ejector stations have been constructed, each containing a pair of Shone's ejectors, manufactured by Messrs. Hughes & Lancaster. The pair of ejectors at station No. 5, near New Mills, are the largest yet constructed, and are notable as having double inlet and outlet pipes and valves to facilitate filling and discharging.

The author then described the ejectors. In speaking of the two Horsfall refuse furnaces, which have been constructed within an old building already provided with a chimney 100 ft. high, he said they are situated about 40 yards from the power-house. Tests of the furnaces and boilers have been made, when it has been found that the two furnaces, each having a grate bar area of 5 ft. 6 in. by 5 ft., are capable of burning about 90 cubic yards, or 30 tons, of refuse per twenty-four hours, and of evaporating water at the rate of 2,400 lb. per hour, at a pressure of 125 lb.

The old-fashioned small sluices which formerly existed at New Mills caused river floods to be greater than they should have been, due to a great extent to the tendency they had to become blocked with débris brought down by the river. In constructing the new works advantage has been taken of the late Mr. Stoney's invention, and a sluice on his principle, 14 ft. 3 in. wide by 8 ft. deep, has been provided. This sluice was supplied by Messrs. Ransomes & Rapier, of Ipswich; it can be raised or lowered with the full head of water against it by one man.

Mr. Collins then gave a detailed account of the engines at Trowse main outfall, after which he said that in addition to the sewerage works, now approaching completion, the Norwich Corporation have carried out a variety of other works during the author's tenure of office. The stonework of the exterior of the Free Library had become much defaced by decay—so much so, in fact, that the mouldings, &c., were to a great extent unrecognisable. The cost of restoring the work in stone was found to be so great that a contract was entered into with Messrs. A. Dreyfus & Co., of London, to cut away the whole of the decayed portions of the stonework, and to make good the whole of the work to the original features, with Tabary's Patent Metallic Stone Cement or Imperishable Artificial Stone. This work was done by French workmen, the contractor having, he informed the author, failed in his attempts to get English workmen to learn the necessary operations. At the same time, such of the old stonework as had not crumbled away was coated with Szerelmey stone liquid. Notwithstanding that the work has been subjected to some sharp, if short, frosts since then, no defect of any sort has shown itself, whereas previously, scarcely a week passed without flakes or larger pieces of stone falling from the building. Adjoining the free library is the former palace of the Dukes of Norfolk, used in recent years as a museum, and now converted, as to part, into public slipper and stand-up wash baths, and as to the remainder, into offices, &c., for the guardians. The stand-up wash baths have been adopted with the view of enabling the Corporation to give a warm bath with cold shower for 1d. A technical institute is now being built near St. Andrew's Hall; the total cost is estimated at 22,000*l.* The contract for the buildings has recently been let to Mr. Samuel Warburton, of Manchester.

The Chairman, in moving a vote of thanks to Mr. Collins for his paper, said that some of the methods employed by the City Engineer in dealing with underground water were specially worthy of consideration. He suggested that a discussion on the paper should be conducted by correspondence with Mr. Collins.

Mr. Mawbey seconded the vote of thanks, which was agreed to unanimously.

On the motion of the Chairman, a vote of thanks was then accorded to the Mayor and Corporation for the use of the Guildhall.

The members then visited various works of interest in the City. The first visit was to St. Andrew's Hall, where a pneumatic painting machine was seen in use. The party then drove to the New Mills Air-compressing station, where are two "Victor" turbines driven by a fall in the river Wensum; two pairs of compound engines and four air compressors, so arranged as to provide alternative means of compressing air for use in connexion with the Shone system. Steam is supplied from a Babcock-Wilson boiler, heated with refuse burnt in the Horsfall furnaces. In a marquee adjoining, refreshments were provided by Messrs. B. Cooke & Co., the contractors. A visit was then paid to the Carrow Works, by permission of Messrs. J. & J. Colman, where the machinery for making tins and boxes for mustard, &c., was inspected. The members were then driven to the Trowse main outfall sewerage pumping station, and afterwards to the Castle Museum, where Mr. Collins described some of the objects of interest.

A dinner was held at the Maid's Hotel, in the evening, Mr. Eayrs presiding, supported by about sixty members of the Association.

The loyal toasts having been honoured, the Chairman proposed "The Health of Mr. A. E. Collins," remarking that the work that gentleman was carrying out at Norwich was of exceptional quality, and was being conducted under exceptional difficulties.

Mr. Collins replied, and then gave the toast of "Messrs. Shone and Ault," and Mr. Shone responded.

Mr. Barber proposed "The Health of the Visitors," and coupled with it the name of Mr. Holmes, the Chairman of the Sewerage Committee of the Norwich Corporation, and Mr. Bassett Hopkins (London).

Mr. Holmes, in responding, said he had not the slightest doubt that the Shone system was the one best adapted to the needs of Norwich.

Mr. Hopkins also responded.

On Saturday morning the members proceeded by steamer (provided by Messrs. Collins & Cockrill) to Brundall, where train was taken to Yarmouth. The party assembled at 12.30 p.m., in the Town Hall, where light refreshments were provided by the Mayor.

Mr. Frank Burton (Chairman of the Sanitary Committee), who, in the absence of the Mayor, presided at the outset of the subsequent proceedings, welcomed the members to Yarmouth.

Mr. Eayrs then took the chair, and moved that their thanks be accorded to the Mayor for his hospitality.

Mr. Barber seconded the vote of thanks, which was agreed to.

The Hon. District Secretary (Mr. Cockrill) then read the minutes of the last Eastern Counties District meeting at Bury St. Edmunds, and on the motion of Mr. A. E. Collins, seconded by Mr. Silcock, Mr. Cockrill was re-elected as District Secretary.

Mr. Cockrill then read a paper entitled "Some of the Recent Works carried out by the Great Yarmouth Town Council," from which we make the following extracts:—

The work of relaying the whole system of sewers has stood well, and out of nearly 100 miles of sewer under his charge there was not one mile but which was absolutely self-cleansing. Since 1886 many extensions had been made to the sewerage works. New pumping-stations on the main sewer outfalls, to prevent the tide-locking of the sewers, have been erected, and flood-prevention works have been carried out, the cost of which in the aggregate has been about 25,000*l.* These works comprise about one mile of 5 ft. egg-shaped and 1¼ mile of 3 ft. egg-shaped sewer, built in concrete with a salt-glazed tile facing—the cost was remarkably low. The 5 ft. sewer cost 33s. per yard run, and the 3 ft. sewer 20s. per yard run without digging. The low cost is due to the very great facilities for making concrete at Yarmouth, the clean shingle being delivered on the works, ready for use, at 1s. 3d. per yard cube. The success of the sea-water works, described in a previous paper, on all points was so marked that the committee determined very soon to extend the works, and instead of the 4,500*l.*, which the original works cost, more than 10,000*l.* has now been spent. The cost, including repayments of capital, interest, and all working expenses, has been about 600*l.* per annum during the last few years since the extensions, and for this quite 100 million gallons of water has been raised to a height of 45 ft. and distributed over the town, or at a cost of less than 1½d. per 1,000 gallons. The street watering takes about 7 million gallons, and sewer flushing the remainder. The water is supplied free to most of the elementary and board schools in the town for flushing closets, urinals drains, &c., some fourteen houses also have it laid on for baths and drain flushing. Flushing is carried out by some twenty-five automatic flushing-tanks, varying in capacity from 3,000 gallons to 1,000 gallons, and with outfalls of from 9 in. to 15 in. diameter, besides about 250 flushing-valves, varying from 6 in. to 3 in. diameter, according to the size of the sewer to be flushed; but he had found that 3-in. and 4-in. pipes with delivery direct into the sewers provide sufficient flush for 9-in. pipes, and that sewers up to 15 in. diameter can be kept clean with the larger-sized valves. The save in the roadwork is very considerable; the sea water has a most beneficial effect on light roads made with gravel or flint. No damage is done on the heavier granite macadam, but a greater amount of cleaning is required in the autumn. The saving on the light roads by the use of sea water, in his opinion, is quite 500*l.* per annum, spread over about twenty-five miles. In addition to the saving caused by the water costing only 1½d. per 1,000 gallons instead of 1s., there is from two to three million gallons less used than there would be if fresh water were employed. The save in horse hire in distributing is quite 250*l.* per annum, and the work is much more effectually done. Its use has been most effectual in preventing nuisances from sewer-gas, as not only is there the mechanical action of the flush, which scours the sewers out, but there is the change of air in the sewers caused by the large rush of water. In the sewerage of the Old Rows, of which there are 145, averaging about 150 yards in length and less than two yards wide, which have been recently sewered, each sewer has its own flushing valve at its head, and is by this means kept perfectly clean. The length of water mains laid in the streets is now thirteen miles, of sizes varying from 8 in. to 3 in. diameter.

During the sixteen years which the author has been responsible, he has laid some forty to fifty miles of concrete footways. The facilities for obtaining materials are very great, and shingle ready for the work, entirely free of sand, is delivered in the streets at 1s. 3d. and 1s. 6d. per yard cube. This permits the path, 3 in. thick, to be laid at a cost of 2s. to 2s. 2d. per yard superficial by the Corporation staff. Contracts, however, have been let and completed at from 1s. 8d. to 1s. 9d. per yard superficial.

The growing difficulty of disposing of town rubbish has for some years been apparent in the town, and although recreation and pleasure grounds have been formed with this material during the last ten years—for he had laid down thirty-two acres of this class of ground on sandy waste land, similar to and partly on the beach—the cost and upkeep of the grounds prevents too great an extension, and the Town Council have reached a point beyond which they could not go at present. It thus became necessary to decide on some other course, and it was ultimately determined to erect a destructor. The foundations of the site are very bad: the river Bure adjoins it on the west, and the mean level of the water in the same

is above the level of the marsh; the soil is for the first foot or two vegetable mould, then there is about 2 ft. of sand which is full of water, and then for nearly 20 ft. a soft alluvial deposit, locally known as ooze. The utmost bearing capabilities of the soil about 6 in. from the top after removing the sod, was by experiment found to be 10 cwt. per foot superficial; the bearing capabilities of the ooze not being more than half this. At a depth of 22 ft. is found a bed of good sand and gravel, and borings on the site show this to be at least 15 ft. thick. The very poor quality of the refuse of the town, which contains a large percentage of sand, with the contents of some 3,000 privies, will give poor calorific results; and the present installation only provides for fixing an 80-h.-p. boiler, the steam from which will be used for fans, for forced draught, a dynamo from which light will be obtained for the works, and motors for sewerage lifting at a station near by. The chimney is to be 200 ft. high; it starts square at the base, is octagonal for 50 ft., and then goes up circular; inside it is a parallel tube 6 ft. in diameter, with fire-brick lining the whole height, and kept at least 4 in. from the outside shaft; for half its height it is 13½ in. thick, and for the remainder 9 in. thick. The foundations which are now in progress for the chimney and main buildings are to be on cylinders. The chimney weighs 2,300 tons, is to stand on sixteen cylinders, each 6 ft. 6 in. diameter, and gives a weight, including the cylinder, of 4 tons 6¾ cwt. per foot superficial on the bed of sand and gravel. The main building is to stand on twenty-six cylinders of 5 ft. 6 in. diameter, and give an average of about 3 tons 5 cwt. per foot superficial on the soil. The cylinders are constructed of concrete blocks 9 in. thick, built in the ordinary way.

Mr. Cockrill then referred to the Depôt, and the Isolation Hospital accommodation. The success of the Isolation Hospital for fever cases and the good work done by it led the Council very soon to make additions to it, as laid out in his first plan. The extensions now being made consist of eight bedrooms to the administrative block, a large double ward block of the usual plan, and, what is perhaps a rather unusual feature, a convalescent block for scarlet fever patients; this consists of a day room, two dormitories, two nurses' rooms, bath room and usual offices. The whole of the ward blocks are erected in concrete, the walls outside being faced with pebble panels, brick quoins and dressings, and inside with glazed tile.

An addition, 130 ft. in length, was made to the old jetty in 1890. The old portion has historic associations connected with the naval wars in the early part of the present century.

Reference having been made to the rifle butts, and accommodation for volunteer encampments, and the recreation grounds and beach gardens, he referred to the fish wharf quay wall. He recommended the Council to put in a concrete quay wall in the year 1888, and this work was completed in 1891. Messrs. Kinniple & Jaffery, of Westminster, were consulting engineers. The wall as designed and executed was composed of concrete blocks, the five lower courses 3 ft. 4 in., and the top two were 3 ft. 6 in. high. Each block was 3 ft. wide on the face; the top three courses were faced with granite rough dressed. The works were completed 1,000*l.* inside the estimate, under the author's supervision, without the intervention of a contractor. The length of the wall is 2,100 ft., and its height from foundation to coping is about 27 ft., 17 ft. of this is below low-water mark.

As early as 1886 he had been instructed to, and he had reported upon the desirability of introducing the electric light into the borough, and in 1890 the Town Council obtained a provisional order, which they commenced to carry out in 1894; Mr. W. H. Preece, C.B., F.R.S., being appointed consulting engineer. The cost of the first portion of the installation was 15,000*l.*, but the demand for the light has been so great that at the present time the capital expended amounts to 33,000*l.*, and leave for fresh loans is asked from the Local Government Board, which will make the capital expenditure 40,000*l.* The increase of the demand is shown in the fact that the lamps installed on April 1, 1895, were 1,600; in 1896, 5,900; in 1897, 8,600; and in 1898, 11,000. The arc lights in the town number sixty (with eleven at the Fish wharf, which are only used when those on the beach gardens are not alight), and are continuous current 1,500 volts, thirty lamps in series. The private lighting is high tension alternate current 2,000 volts, with some twenty transformer sub-stations. The charge made to private customers is 6d. per unit, to churches, chapels, and public elementary schools, 4d. per unit, and to motors, a sliding scale varying from 1½d. to 3½d. per unit. The whole installation has been put in by Messrs. Crompton, of Chelmsford. The mains are armoured cables made by the British Insulated Wire Company, of Prescot.

In conclusion, Mr. Cockrill referred to some works under consideration, such as the provision of a system of electric tramways (the system recommended was the overhead trolly system, and the estimate for the work, which has been deferred, was 36,000*l.*), and a pier and pavilions. The scheme for the pier as approved by the Committee, from his plans and designs, comprised a pier 660 ft. in length, with large T end, a landing stage 900 ft. long surrounding the T end, a large quantity of shelter accommodation, and band stand, &c. A combination of vested interests, and the sentiment that the present old jetty was free to the public, prevented anything being done."

Some of the plans and models prepared for this and other works were on view.

Mr. Mawbey, in proposing a vote of thanks to Mr. Cockrill, said that his method of supplying salt water was a great victory, considering the cost. Their able colleague was practically the pioneer of concrete paths. In regard to the destructor, he was rather surprised that more was not to be done to utilise the waste heat, but he noticed that the refuse was of a very poor quality, and the calorific power would be very low. At Leicester, he was recommending it for use in electric traction. He believed that at least three horse-power could be produced per ton of refuse every twenty-four hours. He did not believe in rushing from ten to twenty tons a day through a destructor. The first duty was to thoroughly burn the refuse so as to avoid any nuisance in the way of escaping dust. He should like to refer to the sanitary tile which had been invented by Mr. Cockrill. It was a very good tile, and he had used it in Leicester.

Mr. Lobley seconded the vote of thanks, and said that in Hanley he was troubled as to the foundations of the destructor in consequence of undermining. He wanted to ask Mr. Cockrill if he had considered the advisability of using a steel chimney, considering the foundation he had to deal with at the site of the destructor. He (the speaker) was considering that point.

The discussion was continued by Messrs. Silcock, Baker, Nettleton, and Hayward.

Mr. Silcock, in calling attention to the extremely low cost of some of the work carried out at Yarmouth, said that it was a great advantage to have so much shingle, &c., to hand. As to the proposed destructor, Mr. Cockrill had great courage to build a chimney 200 ft. high on such a foundation and in such an exposed position. He quite endorsed Mr. Mawbey's remarks as to the tiles invented by Mr. Cockrill; he (the speaker) had used them himself, and he knew what good work could be done with them.

The vote of thanks having been put by the Chairman, and heartily agreed to,

Mr. Cockrill briefly replied. He remarked that he had considered the question of a steel chimney for the destructor, but he had decided to use brick. He did not think, when considering the matter, he could get a loan for more than five years from the Local Government Board.

Mr. A. H. Preece then read a paper which had been prepared by his father, Mr. W. H. Preece, C.B., which was entitled, "The Abuse of Electric Power Houses." It is referred to on another page.

After a brief discussion, in which Messrs. Mawbey and Lobley took part, a vote of thanks was carried to the author of the paper and the reader, and Mr. Preece, jun., briefly replied.

A vote of thanks to the Mayor and Corporation for the use of the Town Hall having been agreed to, visits were made to the various works described by the Borough Surveyor.

The proceedings then terminated.

ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—The annual business meeting of the Glasgow Architectural Association was held in the rooms, 187, Pitt-street—the President, Mr. W. T. Conner, in the chair. The Secretary read the annual report, including the statements of the treasurer and librarian. During the session nineteen new members were admitted. The syllabus comprised nine papers and four lectures, in addition to which there were exhibitions of drawings and photographs. There have been three prizes offered for competition, of the respective values of 10*l.* 10s., 5*l.* 5s. and 2*l.* 2s., the first for a design, the other two for measured work and sketches. The treasurer's account shows a balance of 41*l.* 3s. 6d. on the credit side, and the librarian's statement enumerates valuable additions by purchase and donation. The following gentlemen were elected to hold office during the coming session:—President, Mr. G. S. Hill, A.R.I.B.A.; vice-presidents, Messrs. John Fairweather, A.R.I.B.A., and C. E. Whitelaw; hon. secretaries, Messrs. R. J. Walker and Alex. Wingate; hon. treasurer, Mr. W. S. Tucker; hon. librarian, Mr. Hugh Dale; general committee, Messrs. James Lochead, A.R.I.B.A., Wm. Vickers, Thos. Ramsay, and W. J. Blain.

COMPETITIONS.

TROWBRIDGE TECHNICAL SCHOOL.—As we stated in our last issue, there were sixty-seven competitors in this competition, and the assessor, Mr. E. W. Mountford, placed first the designs of Mr. T. Davison, A.R.I.B.A., of Great Ormond-street, W.C. The designs of Messrs. Briggs and Wolstenholme, Central Buildings, Richmond-terrace, Blackburn, were placed second; and the designs of Mr. A. Dunbar Smith, 28, Theobald's-road, Gray's Inn, W.C., and Messrs. A. G. Hall and Thos. H. Bishop, A.R.I.B.A., Leighton Buzzard, were bracketted for third place. Mr. T. E. Thickpenny, A.R.I.B.A., Breydon House, Lansdowne-road, Bournemouth, Messrs. J. H. Tyars and E. T. Jago, 16, Garfield-road, Lavender-hill, London, S.W., were highly commended.

Books.

Lichfield: The Cathedral and See. By A. B. CLIFTON. George Bell & Sons.

THIS is another volume of Messrs. Bell's little "Cathedral" series, and it well maintains the high standard of excellence reached by those that preceded it. Indeed, in two minor respects it is an improvement upon them. There is an entire absence of indifferently drawn sketch illustrations, and the ground plan is put at the end where it can easily be turned to for reference, instead of in the middle where it had to be hunted for. These admirably condensed and lucid accounts of our cathedrals are obviously the result of much careful research, which we are especially grateful to Mr. Clifton for having undertaken in the case of Lichfield; for, in the absence of much direct evidence as to the early history of the building, it has been the subject of many interesting speculations by antiquarians, whose accounts are scattered in a great variety of publications. Though the See was one of the earliest founded in the country, and originally of immense extent, including the greater part of those of Hereford, Ely, Peterborough, Chester, Worcester, Oxford, St. Albans, Gloucester, Manchester, Liverpool, and Southwell, the cathedral was from the first, and has remained through all its changes, a comparatively small building; not, indeed, so inferior in this respect as might be supposed from the way in which it is often spoken of, but still considerably under the average size of even English cathedrals. It shares with Salisbury the distinction of great regularity of plan and uniformity of style, and is the only English example which has the ideal three spires, and the only one with a polygonal eastern apse. The structure suffered even more than others in the civil wars of the seventeenth century, owing to the close, which had been fortified by an ambitious bishop in the fourteenth, being besieged by both sides in turn. It suffered again terribly at the hands of Wyatt, with his "vistas" and his stucco, and the passage, quoted in this volume from Canon Lonsdale's "Recollections," describing the state of the building before Sir Gilbert Scott began the restoration, must, one would think, convince the most conservative that there was ample excuse for some such thorough overhauling.

Lichfield Cathedral, as we see it now, is one of the most perfect and lovely of our mediæval monuments. In style, if not very spirited, it is exceptionally pure, and some of its features are unique and interesting. It is altogether worthy of a painstaking monograph, and the one under review is not unworthy of it.

Industrial Electricity. Translated and Adapted from the French of HENRY DE GRAFFIGNY, and Edited by A. G. ELLIOTT, B.Sc. London: Whittaker & Co. 1898.

THIS is the first of a series of volumes in electro-mechanics, which are intended to explain in simple language the many and various applications of electricity without going into abstruse theory or using mathematical symbols. As this book is introductory to the rest of the series it ranges over the whole subject, and thus the information given is necessarily very meagre, and unless one has some practical knowledge of electricity, it will merely give a very vague idea of the numerous applications which are to be treated in detail in the subsequent volumes.

On the first page of this book, in describing the constitution of matter, occurs the following

startling statement :—"We conceive matter as being composed of exceedingly small particles called atoms, arranged in groups called molecules. These molecules are not rigidly connected to one another, and even in the densest matter the intervals which separate them are vast compared with their size, and may be likened to the enormous distances which separate the stars." This is certainly a very transcendental theory. According to the ordinary theory, which is good enough for working purposes, the molecules in a liquid are touching one another, and in a solid they are fixed relatively to one another, and only a slight amount of play and vibration is possible. In a gas also, according to Clerk Maxwell, a molecule collides with other molecules some eight thousand million times a second, and the mass of the molecules in a cubic inch is probably greater than the thousandth part of a cubic inch, so that even in this case the comparison seems absurd.

In the résumé of units and dimensions of electric quantities given on p. 27 there are at least twelve misprints ; but as this page would probably be skipped by the class of readers for which the book is intended, this perhaps is not very serious. It is misleading to state that in the best Siemens' dynamometers currents varying from 1 to 0·001 ampère can be measured, as this is a most unusual range. There are one or two other minor points we should like to criticise, but as the subjects are only touched on the misleading effect may be due to the condensation rendered necessary by considerations of space.

The volume is a convenient size, the print is clear, and the division of the matter is good. As a whole it is accurate, and promises well for the series.

Proceedings of the Thirty-first Annual Convention of the American Institute of Architects, Providence, U.S.A. E. A. JOHNSON & Co.

THE Report of the thirty-first "Convention" (which we suppose means the same as "Congress") of the American Institute of Architects is a thinner volume than some of its predecessors which have been in our hands, perhaps because some subjects of special interest have already been pretty well talked out. Among the subjects discussed was that of "The Advisability of licensing Architects," on which a Report of a Special Committee, appointed at the last Convention, was read and is given in full. The various "Chapters" of architects in different States, in relation with the central body, had been invited to express their views on the subject. We cannot go into the details, but the following is the general result as expressed in the Report :—

"It appears from the correspondence, which is voluminous, that in five of the States of the Union laws have been introduced in the various legislatures looking toward the establishment of a Board of Examiners and some standard of professional skill to be required of those who are permitted to practise architecture. These bills, in all cases, so far as the correspondence indicates, have been introduced, advocated, and supported by the architects of the various States where the bills were introduced, both as organised bodies and as individual practitioners. In one State—Illinois—this law has been passed, and is now in operation, or, at least, the Board of Examiners has been duly organised, and is now ready for work.

The general consensus of opinion as expressed by the replies of all the Chapters is almost unanimously in favour of legislative enactment, restricting the practice of architecture to those who have the ability to design strong and safe buildings."

Nothing, it will be observed, is said about examination in artistic qualifications, only as to the capacity to produce "strong and safe buildings," which practically is the only basis on which legislative control could be established. This of course leaves the movement open to the objection made to it in England, that it would result in "hall-marking" a certain class of persons as architects without any regard to their artistic qualifications. It is important to note, however, that the majority of American architects who are represented on the central body are in favour of the movement. The volume contains a paper on "Church Architecture," by Mr. Sturgis of Boston, which, as an expression of the attitude of an architect belonging to a country in which there are no ancient precedents, on a subject in which we in England are so much governed by precedent, is of considerable interest, and we may find space to reprint a portion of it on another occasion.

Public Works in Lancashire for the relief of distress among the unemployed factory hands during the Cotton Famine, 1863-66, carried out under the supervision of Mr. Robert Rawlinson, C.E., Chief Superintending Engineering Inspector to the Local Government Board. With an appendix on the sewering of towns and draining of houses. London : P. S. King & Son. 1898.

THIS is a somewhat curious compilation. It consists of extracts from reports prepared by Sir Robert Rawlinson on the works "of permanent utility and sanitary improvement," which were so ably carried out under his supervision in Lancashire and adjacent counties during the Cotton Famine, together with his paper on "The sewering of towns and drainof houses," which appeared in the "Journal of the Society of Arts" so long ago as March, 1862 ; his report on "Sanitary Works at Windsor Castle," dated 1863 ; and "official and press notices on his receiving the honour of knighthood, 1883," and "on his retirement, 1888." As a contribution to the history of practical sanitation, this compilation is not without merit ; as a biography of one of our most distinguished engineers, it is very inadequate ; if intended for the student of sanitary problems, the matter should have been corrected up to date. The book will be interesting to Lancastrians and to the late engineer's friends and admirers.

The "Journal" of the Sanitary Institute. London : E. Stanford (and at the office of the Sanitary Institute). April, 1898.

THIS latest number of the *Journal* of the Sanitary Institute contains papers on a great many important subjects, one of the most useful being that on "Small Isolation Hospitals," by Mr. Meredith Young, going into a number of small practical details which are sometimes overlooked because they appear so small, but which are of serious consequence. Mr. James Munce contributes a paper (with plans) on "Workmen's Dwellings in Belfast"; Mr. Chas. Mason one on the "Sanitary Aspects of Wood Paving," really a defence of this method of paving, in which we do not much sympathise, though we admit that some of the objections to it may be, as the author argues, the result of an inferior system of laying and inferior material ; and Professor Corfield and Miss Chreiman deal with the subject, of special interest at present, of "The Contamination of Water-supplies by Hop-Pickers."

Greenwood's Timber Calculator. Second edition. By T. HARRY GREENWOOD. Manchester : Buxendale & Co. 1898.

WE gather that this issue may be described as a second edition, though it is not so stated in the usual manner, because an addition has been made, which we suggested in noticing the publication before, in the shape of a distinct statement that the figures in the price columns represent pence and fractions of pence, which was not stated in the earlier copies. We are glad that the small publication has been found useful, as we expected it would be.

Elementary Chemistry, Practical and Theoretical, First Year's Course. By T. A. Cheetham. Blackie & Son. 1898.

THIS is a small book for the use of those about to commence the study of chemical science. The first portion of the book gives directions for the performance of a large number of simple experiments with inexpensive and common apparatus and reagents. The second part deals more with the laws and principles by which chemical reactions are governed. We are glad to see the word "observe" so constantly reiterated throughout the book, for in the study of science the development of the power of observation is far more important than the committing to memory of a host of facts recorded by previous experimentalists.

BOOKS RECEIVED.

SPECIFICATIONS FOR BUILDING WORKS : A Manual for Architectural Students. By F. R. Farrow, F.R.I.B.A. (*Builder* Office ; and Whittaker & Co.)

ELECTRICITY IN TOWN AND COUNTRY HOUSES. By Percy E. Stretton. (A. Constable & Co.)

Correspondence.

To the Editor of THE BUILDER.

TRAINING OF WORKMEN.

SIR,—In your report recently of the dinner of the Institute of Builders, Lieutenant-Colonel Trollope is reported to have said, "That employers seemed to think that complete tradesmen grew on the roadside, and took not the slightest trouble to make them." This most happily expresses the attitude for the past twenty years or so of the majority of employers in the building trades towards the question of the training of the British workman, and it is to be sincerely hoped, for the welfare of British industries, and the health of the people, that Colonel Trollope's words will be heeded.

I cannot expect to have space accorded in your columns to enter fully into the causes which have brought about the state of affairs mentioned, but I may be permttted to briefly point out how, to a great extent, it may be remedied. Broadly speaking, the death of the apprenticeship system is due to two causes. (1) The displacement of handwork by machinery, and (2) the substitution of the contractor for the builder proper. Of this latter class there are but few remaining who have practical knowledge of the details of construction. The comprehensiveness of modern building operations demands financiers at the head of affairs, the practical parts being left to departmental experts. These have no immediate concern in the production of future workmen, as the process to them is troublesome and unproductive. They drain the provinces of men, and when the supply runs short put down more machines. This will continue, sentiment notwithstanding. Machinery means sub-division of labour, and it is impracticable to pass a lad from one machine or department to another continually, so that he can follow the processes that go to make up the finished article. Even so simple a thing as a door may be passed through four or five machines to complete, the final result giving no inkling to the worker as to how it has been reached ; so that if it were possible to revive workshop apprenticeship it would be useless as a remedy.

Twenty-five years' experience with the old and the new workman in all branches of building has convinced me that nothing short of entire production from start to finish, by hand-work, will ensure an intelligent and capable workman ; given that, he may be adapted as may seem most suitable for the production of any particular portion. If, then, the exigencies of modern industry prevent such experience, is it not reasonable to ask that some other method should be attempted to bring about the same result ? My suggestion is that responsible building firms should take a sufficiency of apprentices for periods suitable to the various trades, and for such length of time as to ensure a return for the outlay to be proposed ; that it be a condition in the indentures that they should attend a certain time—say four hours a day for five days a week for the first year—at a properly managed and equipped training school, there to be engaged upon, and instructed in, the construction of the usual class of work, in their respective trades, by thoroughly competent tradesmen ; the remainder of their time to be put in at the works in the usual way.

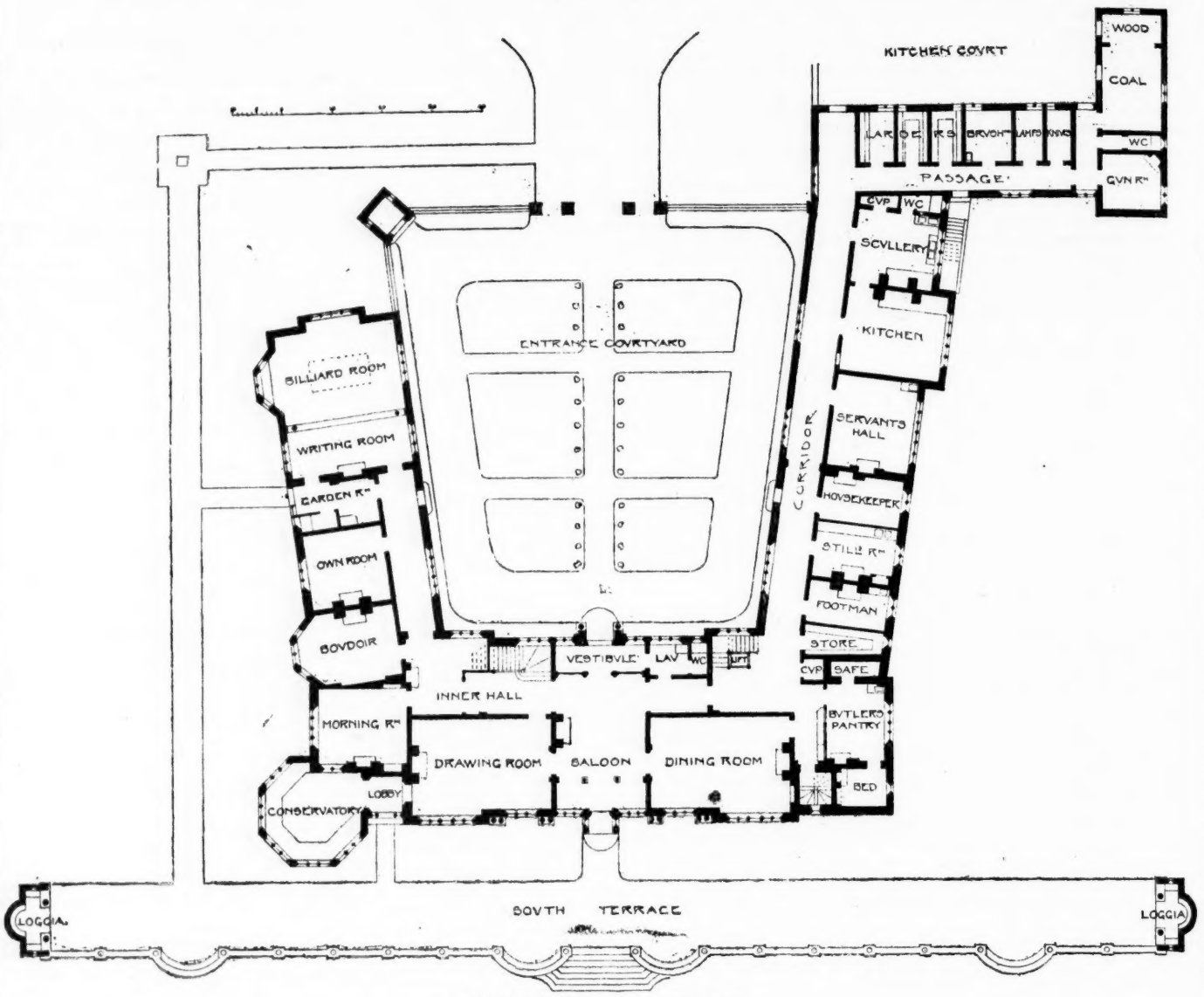
One year, as described, would, in most cases, render a lad so capable and useful that his attendance at the school might be cut down to one or two days per week for the following year, and during the remaining period of his apprenticeship he could probably gain sufficient information in the evening class, providing he was not required to work overtime.

Such training schools could be established where required, and be under the control of any representative association of builders, their cost to be met by contributions from those sending their apprentices for instruction. The details of administration could be settled at a Conference. That the difficulties are not insurmountable is proved by the establishment of such a school in the W.C. district—the Trades Training School of the Worshipful Company of Carpenters. This, although doing a good work unostentatiously, is much hampered by the apathy and indifference of builders ; and any one willing to try the experiment would probably be gladly assisted by the Company.

GEO. ELLIS.

INSURANCE FOR WORKMEN.

SIR,—I am a jobbing and contracting builder, employing all branches of the trade, one-third of the men being constantly in employ, and the other two-thirds being migratory workmen ; and it has occurred to me that a system of insurance might be adopted, and may be self-sustained, by each workman paying a very small amount weekly. At present, when a workman is ill, his fellow-workmen and myself help him by subscription, but this is very unsatisfactory, for obvious reasons. I shall be glad if any of your readers have a workable scheme, and would inform me of the same through the medium of your valuable paper, as there is no doubt other employers would adopt any likely idea for what is a felt want in my district. The great difficulty with me is the



"Hildon," Hants. Ground Plan.

fact that some of the workmen are only employed for two or three days, while others have been with me for twenty years. ASSURANCE.

ART METAL EXHIBITION.

SIR,—With regard to your remarks that the names of artists who have designed work which we have made should have been made known, we would reply that, by an oversight of the printer, no description of our work is in the catalogue. When this is issued in its revised form you will find the names of the artists in it. LONGDEN & CO.

PORTLAND CEMENT KILNS.

SIR,—I should feel obliged if any of your readers can inform me where there are to be seen in working order any recently-constructed chamber kilns for making Portland cement, and can supply me with any information on the subject. R. B. S.

RED ANTS.

SIR,—May I ask the favour of inquiring if any of your numerous readers could kindly give me some information as to the best means of ridding houses infested with the small red ant? I have some houses in which they have burrowed into the earth under the floors, and from there spread over the entire house; and thinking that perhaps some of your readers or correspondents may have suffered from the same trouble, I venture to ask if they would give me some advice in the matter, for which I should be very grateful. S. B. KING.

NEW CHURCH, CATTEDOWN, PLYMOUTH.—It is stated that the first portion of this church, consisting of entrance and a room capable of holding some 200 people, which will eventually form a portion of the west end of the proposed church, is almost complete. The west entrance has been built from the designs of Messrs. Weblin & De Boinville, of Plymouth, and Mr. A. H. Trevenen has completed the sculpture of the scene on Calvary on the tympanum over the doorway.

Illustrations.

PROPOSED MANSION: ELEVATION AND PLANS.

THIS is a scheme, not yet entirely matured, for a house which might perhaps rather be called a State villa than a mansion. Certain special objects were kept in view in designing it; viz., to have a spacious and effective central hall and staircase on a large scale; to provide a generally symmetrical treatment of the front while at the same time facing the dining-room and drawing-room windows the opposite way, according to their requirements of aspect—the dining room facing north-east towards the entrance front, the drawing-room south-west and towards the garden; and to group the bath-rooms and water-closets in a tower separate from the main building, and reached by bridges. Thus the lower story of the tower, on the level of the billiard room floor and close to it, is set apart for the gentlemen; a mezzanine, reached by a stair from the corridor of the men-servants' sleeping rooms, provides for them; the ladies' story is above that, reached from the corridor near the State bedroom; the women servants' story is over that, and would be reached by a bridge over the same point as the men servants' bridge. A separate story can be given for extra bath-rooms. The tower is to carry a storage water tank on the top; hence the buttresses and the thick cross wall.

The entertaining rooms, hall, and conservatory are so aligned that, when desired, on the occasion of a great fête for instance, there would be a central vista of 230 ft. from the grand buffet of the dining-room to the circle of the conservatory. The spectators' gallery of the billiard room is arranged so as to be on a level with and *en suite* with the vestibule near the garden and dining-room doors, the actual playing floor being at a lower level.

The old-fashioned manner of making the access to the entertaining rooms through one to another, without a passage, is to my mind quite in keeping with the objects and character of a State house. Similarly, on the upper floor, the two dressing-rooms are made the anterooms to the principal guests' bedroom. In the ordinary case of a bedroom and dressing-room arranged for married persons, the gentleman's dressing-room is of necessity an anteroom or passage to the bedroom, and there is no reason why the lady's should not be also. The provision of a second dressing-room is of course to some extent a luxury rather than a necessity, but it here serves the purpose also of a bath-room.

It was intended that all flues should be carried into the two large up-cast shafts shown on either side of the hall, but this may perhaps be still better provided for by slightly enlarging the latrines tower and carrying the exhaust flue up the centre of that.

H. HEATHCOTE STATHAM.

"HILDON," HANTS.

THIS house is being built by Sir Augustus Webster, Bart., on the site of a smaller house which has been pulled down to make room for it.

The house will command fine views to the south. The plan adopted has rooms on one side of a corridor only; the corridor looks into the courtyard and the rooms towards the gardens. The wings are canted partly to increase the size of the courtyard, partly for the view and aspect, and partly to soften off the angles of the building. The plan of the ground floor is appended.

The walls are of white Suffolk bricks with Bath stone dressings, and the roofs are covered with green slates. The stables, to the north-

east, were erected previously. The grounds are being laid out by Mr. H. E. Milner.

The builders are Messrs. Jenkins & Son, of Southampton, and Mr. H. W. Gray is the clerk of the works. Mr. Aston Webb is the architect.

The two views of the house are exhibited at the Royal Academy.

BRONZE BRACKET, SOUTH KENSINGTON MUSEUM.

THIS bracket is one of a pair in the South Kensington Museum. They are Italian work, of early sixteenth century date, and were used as supports to candles or lamps.

The illustration is from a pencil drawing by Mr. H. F. Waring.

CHIMNEY-PIECE, SOUTH KENSINGTON MUSEUM.

THIS is a chimney-piece of Italian work of the middle of the sixteenth century, of which the original is in the South Kensington Museum, and is rather vaguely described as "from a palace near Brescia." It is of a very fine type of Renaissance work, and the treatment of the two console figures, with their heads turned outwards towards each side, instead of being centralised in the more usual manner, forms a pretty and characteristic incident in the work.

The illustration is from a pencil drawing by Mr. H. F. Waring.

THE LONDON BUILDING ACT, 1894.

THE TRIBUNAL OF APPEAL AND DEVIATIONS.

THE Tribunal of Appeal under the London Building Act, 1894, sat at the Surveyors' Institution on Wednesday to hear an appeal lodged on behalf of the Lion Brewery Company, Limited, by Messrs. Layton, Sons, & Lendon, solicitors, against the decision of the London County Council, contained in a resolution passed on May 10 refusing to sanction certain deviations from the plan certified by the District Surveyor under Section 43 of the Act, so far as relates to the proposed rebuilding of No. 29, Foubert's-place, Regent-street. The members of the Tribunal sitting were Messrs. Arthur Cates, A. A. Hudson, and J. W. Penfold. The appellants were represented by Mr. A. F. Wootten, barrister, and the County Council by Mr. Seager Berry.

Mr. Wootten, in opening the case for the appellants, said this was an appeal of a somewhat similar nature to that which the Tribunal had previously allowed under certain circumstances in regard to an adjoining building in Foubert's-place. He thought this was a case of some little hardship upon the builders and owners, because, although on January 10 they submitted plans, it was not until May 11 that they got the decision of the County Council on the matter. The application was to deviate under Section 43 of the Act from old certified plans. That application had been absolutely refused, as shown by the letter of February 10 from Mr. Blashill, the Council's Superintendent Architect, stating that as more land would be occupied by the proposed new building than was occupied by the old, the Council had no power to entertain the application. A discussion then took place between the respective parties, with the result that it was decided fresh application should be made to the Council, when it was understood they would not take up the *non possumus* position they had taken up before. The second application was therefore made on April 18. Much to his clients' surprise, on May 12 they received intimation that the Council had passed a resolution refusing sanction. After that there was nothing to do but to bring the matter before the Tribunal. The deviations desired were to the following effect:—It would be seen by the old certified plans that on the west side of the small back yard there was a building which extended to the height of one story. On the east side there was a two-story building. Now, the deviation which they wished to make was to take the building which was on the west side and add it on to the building on the east side. That deviation would not entail the occupying of any more space than was originally occupied by the building already there. Another deviation was to carry that building on the east side one story higher. Then, on the additional plans which were sent with the second application there was shown an iron staircase which went up from the yard, and which, rightly or wrongly, his clients did not regard as a deviation, and certainly not an erection within the meaning of the Act such as they might not place there, because the amount of air space occupied by the staircase would be infinitesimal. Therefore, what was intended to be done was to transfer a building from one side to the other (at the same time not to occupy more superficial area) and to carry that building up one story higher. In the space they were now seeking to use for an additional story there was a "flying" chimney, so that they were not really purposing to take up much more of the cubical air space. They also purposed giving up a little space on the north side of the yard, and in addition to that they had dug out under the basement, and had covered the yard with a grating, so that they had given additional air space to the cellars below. He did not know what reason his friend Mr. Berry would give for the refusal of the application, but it was his contention that by Sub-Section 2 and Section 43 of the Act the Council had no power to refuse sanction. This section laid it down that if a person erecting an intended domestic building should desire to deviate, it should be lawful for him to apply to the County Council for sanction, and they *shall* sanction on such conditions as they might think fit. He submitted that no Act of Parliament had ever yet been construed so that the word "shall" meant "may." It seemed an obvious conclusion that what the County Council were required to do was to sanction the deviations, and the only discretion given to them was to impose conditions. He submitted that in this case the Council had made a dangerous precedent, and one entirely outside their powers.

Mr. Hudson: Do you say the Council are bound to sanction any kind of plans whatsoever so long as they impose conditions?

Mr. Wootten: I suggest the Council would cover themselves by saying the builder must follow out all the conditions prescribed for domestic buildings erected after the commencement of this Act.

Mr. Leonard Goodwin, of Messrs. Goodwin & Sons, architects, was then called and gave evidence in support of counsel's statement.

In reply to Mr. Seager Berry, Mr. Goodwin said they would by the proposed deviations considerably reduce the air space (to the extent of one-third) above the level of the first floor. The iron staircase outside would give better exit in case of fire. There would be no staircase on the inside.

By Mr. Wootten: He was not actually wedded to the erection of the iron staircase, and had the County Council imposed a condition that the staircase must go up inside the building, he would have raised no possible objection to such a condition. Instead of that, all the intimation received was that as the new buildings would occupy more land, sanction would be refused.

Mr. Goodwin then presented an alternative scheme, which had been prepared to meet such a condition had it been made.

By Mr. Berry: He had not submitted any such scheme to the County Council.

Mr. Seager Berry, in replying to the case on behalf of the Council, said, on the point raised by Mr. Wootten as to the wording of sub-section 2 of section 43 he would admit there might be a point of law. Mr. Wootten had contended that the word "shall" meant "must." In his opinion it was difficult to say whether such words always did bear an imperative meaning. In the case of *in re* Lord Thurlow *ex parte* the Official Receiver, Lord Esher had laid it down that the word "shall" had not always an obligatory meaning, but might at time have a directory meaning. So far as he could judge, it seemed to be left to the Court to say from the general circumstances whether it was permissive or obligatory. His contention was that in this case it was only permissive, enabling the County Council to give consent if they thought fit.

The Chairman at this stage pointed out that perhaps some arrangement might be come to between the parties so that the appeal might be allowed, subject to conditions somewhat on the lines suggested by Mr. Goodwin's alternative scheme.

Mr. Berry said under these circumstances he need not argue the point of law further. He must ask, however, that the proposed building be kept down to the building line adjoining.

The following arrangement was then agreed to:—That in the rear of the main building, which shall not exceed a depth of 24 ft. 6 in. from the front in Foubert's-place, there shall be provided on the level of the first floor an open air space, open to the sky, exclusively belonging to such building, extending to the northern boundary and of a width on the line of the back wall of the main building of 13 ft. 9 in., and at the northern boundary of 16 ft. and not less than 150 ft in superficial area, exclusive of party or external walls. That any portion of the new building which may be erected on the remaining space in rear of the main building shall not exceed in height to the eaves of the roof thereof 24 ft. above the level of the pavement in front, or exceed the limit of the diagonal line of 63½ deg.

Mr. Wootten applied for costs, but the Tribunal declined to grant the application.

ELECTRIC LIGHTING, PEMBROKE.—Mr. C. P. Cotton, Inspector to the Local Government Board, recently held an inquiry in the board-room of the Town Hall, Ballsbridge, with reference to the application of the Commissioners as the Urban Sanitary Authority for the sanction of the board to a loan of 33,000*l.* for electric lighting purposes, and to a loan of 15,000*l.* for constructing paved channel courses. Mr. Robert Hammond, Consulting Electrical Engineer, gave evidence, and Mr. Charles France, architect, Bradford, gave evidence as to the plans for the necessary buildings, &c., the cost of which would be about 6,000*l.* Mr. John H. Middleton, C.E., gave evidence as to the second branch of the application.

The Student's Column.

THE CALCULATION OF STRENGTH OF MATERIALS AND RESISTANCES.—XXIV.

IT must not be forgotten by the student that, whether he is dealing with retaining walls or with any other kind of walls, the load on the soil at the bottom of the foundations must not be more than the soil in question can bear with safety.

The safe load that can be put upon various kinds of soil differs largely, and it is not an easy matter to determine, without careful experiment, how much load any particular soil will safely carry per square foot of its surface. There are certain figures, however, which are pretty generally accepted, and which will serve as a guide to the student.

Rankine advises that the safe load on an earth foundation should not be assumed at more than one to one and a half tons per square foot, but experience has shown that on good compact gravel, sand, or loam, two to three tons per square foot is a quite safe figure, provided the depth of the foundation is sufficient to protect the earth from atmospheric influence, either of heat, frost, or wet, and even as much as five or six tons may be placed upon such good soil if there is no objection to a certain amount of subsidence, in which case, of course, the loads should be carefully distributed so as to ensure equal subsidence of all parts of the building. Indeed, as it is probable that all soils ordinarily met with in building become compressed to some slight extent when a load is placed upon them, the student should regard it as an imperative necessity for sound construction that the load of his building should be evenly distributed over the whole area. The usual method of obtaining equal pressure upon the earth is of course the use of concrete, but too often the concrete is put in somewhat unthinkingly, so that an even distribution of pressure is not obtained.

Any vibration occurring in the building itself, or in proximity to it, will largely increase the effect of the load upon the earth, and almost invariably causes settlement or the sinking of the earth under the load placed upon it.

Clay is ordinarily more compressible than the soils we have mentioned above, and should not, therefore, be loaded with more than from one to two and a half tons per square foot, according to its nature and quality, as there is a considerable difference, indicated by the figures we have just mentioned, between the bearing powers of different clays. In dealing with clay it is particularly important that the foundation should be carried sufficiently deep to preserve the earth from the adverse influence of weather and atmospheric action. The method of calculating the pressure upon the soil brought to bear by any particular building presents no difficulty. Let us suppose, for the sake of example, that we have a pier 3 ft. by 3 ft. on plan, with a load of 6 tons per square foot on the bottom course of the pier, and that we have to deal with a soil which can only be trusted to carry 1½ tons per square foot. The bearing power of the soil is, therefore, one-fourth of the load on the pier, and we should require the bottom of our foundations where it rests upon the earth to have four times the area of the pier. The area of the pier is 3 ft. by 3 ft., equal to 9 ft. super; the area of the bottom of our foundation should, therefore, be four times nine, equal to 36 ft., and the plan of our foundation will be a square 6 ft. by 6 ft.

It sometimes occurs that soils are met with which will not bear even as little as one ton per square foot; thus, in silty soils, settlement would take place probably at the rate of from 3 to 12 in. per ton per square foot with a quiescent load.

In such cases there are various expedients open, for some of which calculations may have to be made. One of the best known of these is piling. Unfortunately there are so many factors concerned with the bearing power of piles that it is practically impossible to lay down a rigid rule which shall be satisfactorily applicable in all cases. Undoubtedly the ground itself, though not sufficiently trustworthy to bear the whole load, does carry some portion of the weight of the building. It is, however, the custom to assume that the piles are to carry the whole load, which certainly is on the right side; but even so it is difficult to assign a proper weight to each pile, particularly in clay soils, as there

is a possibility and even a probability that water will work its way down between the pile and the clay, thus diminishing the amount of friction between the pile and the earth around it, which is one of the most important elements in the bearing power of piles. Piles do not ordinarily carry the weight upon them by resting on firmer soil beneath them, but by the resistance to sinking which the friction against their sides affords. Any cause, therefore, which lessens this friction, whether it be the percolation of water, or vibration in the building or near it, will cause a diminution of the friction, and therefore of the sustaining power of the pile.

Taking a line through experience, we find in the case of London Bridge each pile under some of the piers sustains a load of 80 tons, and as they are 12 in. square, this means 80 tons per square foot; numerous settlements have, however, occurred in the piers, and it is not going too far to say that this load is excessive. At Blackfriar's Bridge the load on the piled area is 5½ tons per square foot, the piled area including both the piles and the clay enclosed by them. Here, again, considerable settlement has occurred, probably by the bodily settlement of the mass of piled clay into the unpiled clay below it, the piles and earth having sunk together. At the Hull Docks piles carry between 20 and 25 tons each, and they are 10 in. square. Other examples might be quoted of piles loaded with from 20 to 70 tons per square foot of area of the head of the piles. A good rule for the bearing power of piles is, for the extreme bearing power multiply the cube root of the fall in feet of the hammer used in driving by the weight of the hammer in pounds, and this product by ·023, and divide by the amount of the last sinking in inches plus one. Thus, supposing a pile were being driven by a 600 lbs. hammer falling 27 ft., and at the last blow the sinking of the pile were half an inch, we should have $L = \frac{3 \times 600 \times \cdot023}{\frac{1}{2} + 1}$

$= 1{,}200 \times \cdot023$

$= 27{\cdot}6$ tons.

Only a proportion of the extreme load thus found should be taken as the safe load. This proportion should not exceed one-half if the piles are being driven in firm soil, and one-sixth if in soft river mud or silt. If the work is subject to vibration, these figures should be halved. It is, of course, assumed that the piles have not been driven down to solid rock.

We have intimated above that the bearing power of piles is principally due to the friction against their sides, but it is difficult to calculate their bearing power with certainty from an estimate of this friction, as it is well nigh impossible to determine before actual driving what the friction is in any particular case between the piles and the earth into which they are driven, and it is probable that the friction even in the most favourable instances does not exceed one ton per square foot, whilst with ordinary soils and clay it may be about half to threequarters of a ton, and in silt and wet river mud no more than one-tenth to one-fifth of a ton per square foot of pile surface.

Making a calculation of bearing power by an estimate of friction is useful in dealing with piers of masonry, brickwork, or concrete used in made ground or other faulty soil. This may be of very great depth, and adequate support may be obtained without going right through down to the firm soil beneath. Thus, supposing we had 60 ft. of made ground, and sank a concrete pier, 3 ft. by 3 ft., for 40 ft. only, then if we assume that the friction between the pier and the soil is one quarter of a ton per square foot, we should calculate the bearing power of our pier thus:—the superficial area of the surface of the pier is $40 \times 12 = 480$ square feet, and the bearing power, therefore, $480 \times \frac{1}{4} = 120$ tons.

CHAPTER XXV.

ALTHOUGH not often taken into consideration by architects, so much of the science of hydraulics as relates to the flow of water and other fluids through pipes should receive the attention of the architectural student.

In the theoretical investigation of hydraulics, pipes are assumed to be laid in straight lines and perfectly free from all obstruction to the flow, but these conditions are not generally found in practice. Pipes are not laid perfectly straight, nor are they perfectly smooth or of uniform diameter, and irregularity in these respects tends to retard the flow. It is therefore advisable, under all circumstances, to make the size of the pipes sufficiently large (theoretically) to discharge 20 per cent. more fluid than the amount actually required. And, in addition to this, if there is any probability of the interior of the pipes becoming lessened in area by deposit or encrustation, a still further increase of size ought to be allowed.

In speaking of the force which causes water and other fluids to move through pipes, the term "head" is generally used. By "head" is meant the vertical height from the top of the highest surface of the water to the centre of the orifice through which it is flowing. It does not matter whether the horizontal distance between the top of the water and the point of the orifice is small or great, nor whether the piping goes straight from one point to the other, or by a circuitous route, even, possibly, for part of the distance below the horizontal level of the orifice; the "head" is still the same. Thus, if we had a cistern at the top of a house, and a bath-room on the first floor, the amount of the head would still be the same, even if the pipe from the cistern to the bath-room went down to the basement and then rose to the bath-room, or if it went direct from the cistern to the point of discharge. The work, however, which the head or force has to do would vary considerably in the two cases.

In every instance the head has three kinds of work to do: first, to overcome the obstruction of entry into the pipe; second, to overcome the resistance of the flow caused by friction against the sides of the pipe; and third, to produce velocity of flow in the pipe, and it is a common practice to speak of these as the "entry head," or head of entry, the "frictional head," and the "velocity head," or head of velocity, or effective head, since it is this last alone which is the net force performing effective work in causing the flow of fluid through the pipe.

The head of velocity is the height through which a body must fall in vacuum to acquire the velocity with which the water actually flows through the pipe, it is therefore equal to $\frac{V^2}{2G}$ in which V is the velocity in feet per second, and G is the acceleration of gravity or 32·2 ft. The head of entry is, with ordinary pipes having square edges, often taken at half the velocity head, or it may be found more accurately by the formula $H_e = V^2 \times C$ where H_e is the loss of head on entry or head of entry, V is the average velocity in the pipe, and C is a constant whose value for round openings with square edge is ·007849, for splayed or bell-mouthed openings to a circular pipe ·000444, and for square-edged circular pipes projecting into the cistern, ·014846.

The frictional head or loss of force due to the resistance of the pipes includes the losses due to angles or bends in the pipe, and the loss due to friction against the sides of the pipe.

For the head lost by angles or elbows in a pipe, Hurst gives the formula

$$H_a = \frac{V^2}{64{\cdot}4}\left(\cdot9457 \operatorname{Sin}^2\frac{\phi}{2} + 2{\cdot}047 \operatorname{Sin}^4\frac{\phi}{2}\right)$$

Where ϕ is the angle of deflection from the straight portion of the pipe and for the convenience of those of us who are not expert mathematicians, the formula is modified to the simpler form $H_a = V^2 \times C$ where C is the value for different angles of the remaining factors in the original formula, thus:—

C = ·000109	when	angle	of deflection	= 10°
= ·000466	,,	,,	,,	= 20°
= ·001134	,,	,,	,,	= 30°
= ·002158	,,	,,	,,	= 40°
= ·003634	,,	,,	,,	= 50°
= ·005652	,,	,,	,,	= 60°
= ·008276	,,	,,	,,	= 70°
= ·011491	,,	,,	,,	= 80°
= ·015248	,,	,,	,,	= 90°

For the loss of head due to circular bends Hurst gives when the radius of the axis of the bend is greater than five diameters of the pipe, $H_b = \frac{V^2\theta}{88489}$ where H_b is the loss of head due to the bend, V the velocity in the pipe and θ the number of degrees in the bend.

For cases where the radius of the bend is less than five diameters, Weisbach's formula is given as being more accurate, thus:—

$$H_b = \frac{V^2\theta}{11592}\left\{\cdot131 + 1{\cdot}847\left(\frac{d}{2r}\right)^{\frac{7}{2}}\right\}$$ where d is the internal diameter of the pipe and r the radius of the axis of the bend, both in inches.

For smooth, cylindrical, cast-iron pipes, the loss of head by friction against the sides of the pipe can be found by Weisbach's formula, thus:—

$$H_f = \left(\cdot0144 + \frac{\cdot01716}{\sqrt{V}}\right) \times \frac{L}{D} \times \frac{V^2}{64{\cdot}4}$$

Where H_f is the frictional head in feet, V is velocity in feet per second, L is length of pipe in feet, and D is diameter of pipe in feet.

The total head required, therefore, to furnish a given velocity in a pipe would be found by adding together the head of velocity, the head of entry, and the head of friction (including that required for bends or elbows).

Hurst gives also the following formulæ from Eytelwein, which are much used:—

For open channels, and pipes which are not running full:—

$$V = 95\sqrt{RS}$$

$$Q = 95A\sqrt{RS}$$

For pipes running full:—

$$V = 13{\cdot}7255\sqrt{dS}$$

$$G = 28\sqrt{d^5 S}$$

$$H = \frac{G^2 L}{784\, d^5}$$

$$d = \sqrt[5]{\frac{G^2 L}{784\, H}}$$

$$L = \frac{784\, {}^5H}{G^2}$$

In these formulæ, A is sectional area of flowing stream in feet, d is diameter of pipe in inches, G is supply in gallons per minute, H is head of water in feet, L is length of pipe in feet, Q is discharge in cubic feet per second, V is velocity in feet per second, R is hydraulic radius or mean depth (which in open channels or partially full pipes is the sectional area divided by the wetted perimeter, and in pipes running full is one-quarter of the diameter), S is the sine of the inclination of the pipe—that is, the total fall divided by the total length.

A simple and convenient formula is Darcy's, which although not quite accurate has its error on the right side for practical work. This is

$$V = C\sqrt{\frac{D}{4} \times \frac{H}{L}}$$

where V is velocity in feet per second, D is diameter of pipe in feet, H is effective head in feet, that is the actual head less the loss due to entry, bends and angles, L is length of pipe in feet, and C is a constant whose value for ½ in. pipe is 65; for inch, 80; for 2 in., 93; for 3 in., 99; for 4 in., 102; for 5 in., 103; for 6 in., 105; for 7 in., 106; for 8 in., 107.

GENERAL BUILDING NEWS.

CATHOLIC CHURCH, PRINCETHORPE, WARWICKSHIRE.—The foundation-stone has just been laid of a Roman Catholic Church, Princethorpe. The church, which is dedicated to Our Lady of the Angels and St. John the Evangelist, consists of nuns' choir, chancel, transepts, strangers' chapel, ante-choir, nuns' and priests' sacristies, &c. The chancel is terminated by a five-side apse. The clearstory of the chancel, in each bay of which is a two-light window, is supported by nine arches resting on stone shafts. Outside this is an ambulatory extending round the apse. A chapel projects from the centre bay. The bay on either side is filled with a three-light window. In two other bays of the ambulatory are recesses for altars. The strangers' chapel is on the south side of the chancel, and at this point the wall of the ambulatory is pierced with two arches, which enables those in the strangers' chapel to see the altar. An arch divides the chancel from the crossing, and there is another arch between the crossing and nuns' choir. The organ will be placed in a gallery in the south transept, supported on two stone arches. There is a similar treatment in the north transept supporting a tribune, which will be connected with the infirmary. The nuns' choir is lit by two two-light windows in each bay, and also by a five-light window in the west gable. A gallery is provided for the lay sisters at the west end, over the ante-choir. The nuns' and priests' sacristies are placed in the south side of the nuns' choir. The tower is on the south side at the extreme west, and will rise to a height of about 130 ft. The internal length of the church is 108 ft., and the total length from the chapel at the extreme east to the west wall is 135 ft. The width across the nave and chancel is 31 ft., and the internal height is 46 ft. The church is built of brick, with Ruabon brick facings, and the dressings are of Greenshill stone. The interior dressings are of Bath stone; oak will be used for the floor of the nuns' choir, and mosaic for the chancel floor. The church has been designed by Messrs. Pugin & Pugin, of London, and the work is being carried out by Messrs. Foster & Dicksee, of Rugby. Mr. Healy is

the clerk of the works. The church is being built on the site of the former domestic offices, and a new suite of such offices has had to be provided. It consists of a laundry block complete, with bakery, sculleries, &c., and an extension of the kitchens. The architect for these buildings was Mr. Pugin, and the work has been carried out by Messrs. Foster & Dicksee, of Rugby.

PROPOSED CHURCH, CARLIN HOW, YORKSHIRE.—It is proposed to erect a new church at Carlin How. Plans have been prepared by Mr. Hicks, architect, of Newcastle. The building will be a brick one, and is estimated to cost about 1,600*l.*

CHURCH, LYTCHETT MINSTER, DORSETSHIRE.—A new church, St. Aldhelm's, has been erected at Lytchett Minster. The building is in the Early English style, and has been built from the plans of the Diocesan Architect, Mr. Crickmay. The internal fittings are of oak, and there is a font of Caen stone, with Purbeck shaft.

CATHOLIC CHURCH, TULLAMORE, IRELAND.—The foundation-stone has just been laid of the new Catholic church at Tullamore. Mr. Wm. Hague, of Dublin, is the architect. The new church will seat 1,600 persons, with additional space for 500 more on special occasions. The cost is estimated at about 15,000*l.*

ST. PHILIP'S CHURCH, WEST BROMWICH.—The foundation-stone of this church, which, when completed, is to accommodate 750 people, has just been laid. At present it is intended to erect the nave and side aisles only, at a cost of 4,000*l.*, and to accommodate 570 people. The contractor is Mr. J. Dallow, of Blackheath. Messrs. Wood & Kendrick are the architects.

CHAPEL, &C., BATH ROYAL UNITED HOSPITAL.—On the 6th inst. the Bishop of Bath and Wells dedicated, at the Bath Royal United Hospital, the most recent addition to the building—a chapel, to be named St. Luke's. The chapel will accommodate about 150 people. There is a chaplain's room adjoining, and beneath are new kitchens and a scullery—the whole of the scheme having been carried out at an expenditure of about 2,000*l.* A stained-glass window, in memory of Nurse Margaret Evans, has been placed in the new building. Messrs. Browne & Gill, of Bath, were the architects.

WOODVALE PRESBYTERIAN CHURCH, BELFAST.—The memorial stones in connexion with this church were laid on the 4th inst. The new building has been designed to occupy a site facing the Shankill-road, adjacent to Woodvale Park. As one side of the building is turned to the Whiterock-road, a square tower with stone spire is placed at the angle. Upwards of 1,000 sittings being required, the plan of a simple nave and aisles, with shallow transepts occupying an oblong space of about 90 ft. by 70 ft., was adopted. The tower, which is pierced by lancet windows, and crowned by a cornice and stone spire, rises to a total height of 120 ft. An angular projection is placed on the opposite angle of the main gable. A space has been reserved at the rear of the church for a lecture hall. The contractor for the entire work is Mr. Thomas M'Millan, and the architects are Messrs. Young & Mackenzie, Belfast. The new building will cost 5,000*l.*

CATHOLIC CHURCH, GORING.—A new Catholic Church has just been opened in Ferry-lane, Goring. Mr. Ravenscroft was the architect.

WESLEYAN METHODIST CHURCH, CHELMSFORD.—A new church for the Wesleyan Methodists has just been opened at Chelmsford. The architects were Messrs. Gordon, Lowther, & Gunton, of London, whose designs were selected in competition. The style is Late Decorated throughout. The main entrance faces the High-street. In addition to the church, there are Sunday schools, church parlour, and vestries. The interior of the church consists of a nave, two transepts, a chancel, and an organ chamber. Over each transept is a gallery to hold 200 children in all, and over the nave there is a gallery to seat 100. The staircase approaching the latter is of stone, with iron balustrades, the staircases to the transept galleries being of pitch-pine. The church on the ground floor will seat 650 adults. The choir will occupy the chancel. The pulpit, which is situated on the right of the chancel, is of oak. The floors of the aisles are of wood blocks, the tower entrance, narthex, and chancel being paved with mosaic. The large schoolroom provides for 400 children, and the infants' schoolroom for 150. The building has been fitted throughout with the electric light by Messrs. Christy & Norris.

PRIMITIVE METHODIST CHURCH, WATFORD.—A new Primitive Methodist church has just been opened at Watford, in St. Albans-road. At the entrance is a brick porch leading to a vestibule and lobby. The pulpit is opposite the entrance, and at the same end is the vestry, which will be used as a class-room. The exterior of the building is faced with Fletton red bricks, relieved with Bath stone dressings; the constructive timbers are of Baltic red deal, and the whole of the internal joinery is of pitch pine, slightly stained and varnished. The tower of the building is used as an extractor. Welsh slates are used for covering the roof. The greater part of the congregation is provided for on the ground floor; a small proportion only in an end gallery. A large vestry or class-room and two smaller ones and lavatory are provided in the rear. The heating is by low-pressure hot water. The total accommodation is for 460 persons. The estimated cost is 1,650*l.* The building and fittings have been designed and erected under the supervision of the architects, Messrs. Thomas & Charles B. Howdill, Leeds. Messrs. Cannon & Fisher, of Northwood, were the builders.

METHODIST CHURCH, WEST HARTLEPOOL.—The foundation stones of the new Methodist New Connexion Church, Park-road, West Hartlepool, were laid on the 8th inst. The building will consist of a church to accommodate 550, and schools with accommodation for 400. There will be numerous class-rooms and vestries. The estimated cost is about 4,700*l.* Mr. Garry is the architect, and Messrs. Howe & Co. the builders.

GARTH C.M. CHAPEL, PORTMADOC.—This chapel was opened recently. The building, which is 62 ft. long by 46 ft. 6 in. wide, will accommodate about 800 people. The schoolroom underneath is 54 ft. long by 27 ft. wide, with class-rooms. The architects were Messrs. Owen Morris, Roberts, & Son, Portmadoc, the contractors being Messrs. S. Roberts, W. Owen, J. Williams, and J. T. Jones. The cost will be about 5,000*l.*

CONGREGATIONAL CHURCH, KETTERING.—The memorial stones in connexion with the new Congregational Church, which is being erected on the London-road, Kettering, were laid on the 7th inst. The architect is Mr. H. A. Cooper, and the builders Messrs. C. & F. Henson. The church is situate at the corner of the London-road and St. Peter's-avenue. Inside, the church is arranged on an amphitheatre principle, the total length of the main body of the church, exclusive of the choir space, being about 61 ft. long by 45 ft. wide, except at the transept, where the width is 67 ft. At the rear of the rostrum is seating for the choir. Behind the main portion of the building are several rooms, all of which have separate entrances from corridors at the rear of the church. The total length of the building is 102 ft., and the total width is 71 ft., the contract for the erection of the building being 4,550*l.* The church is being built of red brick with Weldon stone dressing.

METHODIST CHAPEL, ST. IVES, CORNWALL.—The foundation-stones of the Methodist New Connexion chapel, now being erected at St. Ives, were laid recently. The site is at the junction of Bedford-road, High-street, and Tregenna-place, on which both chapel and school premises are to be erected. Mr. Firth, of Oldham, is the architect. The tender of Mr. Sandry, of St. Ives, was accepted.

NEW FREE CHURCH, COLMONELL, AYRSHIRE.—The memorial-stone of a new Free Church at Colmonell was laid recently. The church, which is being built from the design of Mr. Alex. Petrie, Glasgow, is in the Gothic style, and the principal external feature will be a square tower rising to a height of 55 ft. The plan of the church is cruciform, with nave, transept, and apse, and will accommodate 250 persons. The cost will be about 1,650*l.*

CONGREGATIONAL CHURCH, CROYDON.—The Congregational Church, Selhurst-road, Croydon, has undergone extensive improvement by the provision of new leaded lights, and new pulpit, raised platform, and choir seats in Kauri pine and Sequoia panels. The pulpit stands on a base (octagonal) of Kauri pine with Sequoia panels, and oak columns. The walls and ceiling have been coloured with "Duresco" and stencilled to special designs. Messrs. Akers & Co., of South Norwood, were the builders, and the architect was Mr. W. Theobalds, London.

PROPOSED UNION CHURCH, WORMIT, N.B.—It is proposed to erect a new free U. P. church at Wormit from plans prepared by Messrs. J. Maclaren & Sons, architects, Dundee. The building will accommodate 500 persons, and the cost will be about 2,700*l.*

SCHOOLS, GRAYS.—The formal opening ceremony of the New Bridge-road Upper Standard Schools, Grays, took place recently. Mr. C. M. Shiner has been the architect, and Mr. H. J. Carter was the builder. The school, which consists of two floors, occupies a space of about 100 ft. by 60 ft., and is in the Queen Anne style. Rising from a substructure of blue Staffordshire brick, the main portion of the building is in grey stocks, with yellow stock facings and relieving arches of red bricks. The main entrance, with ornamental reliefs of red bricks and Ham Hill stone dressings, fronts the road. Other entrances are provided on the right and left to the playgrounds, but, from the road, staircases inside the main entrance lead up to the boys' and down to the girls' departments. The roofs are of Welsh slates, with red ridges and finials. An assembly-room and four class-rooms are provided on each floor for the accommodation of the 300 children of either sex. On the mezzanine-floor is the mistress's room. The entire school is heated by Benham & Sons' hot water apparatus, with radiators in each room, and provision is also made for cookery classes and demonstrations. Double entrances are arranged for the children, with separate staircases for masters and mistresses. Separate playgrounds, covered playsheds, and offices, are provided at the rear, and cellars underneath will be used for storage. The cost of the present building is about 10,000*l.*

NEW WEYMOUTH HOUSE SCHOOLS, BATH.—These buildings, which have been rebuilt, were opened a few days ago. The buildings are three stories high, and being placed in the centre of the land divide the boys' playground from that of the girls' and infants', the former having their entrance from Abbey Green, the latter at the back of St. James's Church. Each floor consists of a main school and two class-rooms. Glazed screens divide the schoolroom from the class-rooms. Hat and cloak accommodation, lavatories, &c., are given, and teachers' rooms are provided on each floor. The schools are warmed by means of hot water. The accommodation provided is for boys, 216; girls, 216; infants, 280; or a total number of 712 scholars. The cost of the schools, including boundaries, playgrounds, heating, sanitary blocks, &c., has been 5,874*l.* During the course of the excavations many traces of the Roman occupation were found, including the tesselated pavement, which was taken up, and has been relaid in the Roman Promenade. The work has been carried out by Messrs. Jacob Long & Sons, under the superintendence of Mr. C. B. Oliver, architect, of Bath, while Messrs. Haden & Son, of Trowbridge, were responsible for the heating arrangements.

SCHOOLS, DORKING.—Inaugural stones have just been laid of new British Schools in Vincent's-lane, Dorking, Surrey. On the ground floor of the buildings are the schoolrooms of the junior boys and girls, and of the infants. The former measure 48 ft. by 22 ft., and the infants' room 39 ft. by 18 ft. There are also two class-rooms. On the floor above are the schoolrooms of the senior children. A cookery class-room adjoins. There will also be a laboratory. The upper rooms are reached by means of stone staircases connected with the outer porch, this affording separate entrance for the boys and girls. The upper floor of the north-east wing is set apart for caretaker's apartments. Altogether the accommodation will provide for something like 400 children. The work is being carried out by Messrs. Colls & Sons, of Dorking and London. Mr. H. T. Challacombe has superintended the operations, and Mr. J. E. Spicer is the general foreman of the works. The architects are Messrs. Balfour & Turner, of London.

HOLY TRINITY INFANT SCHOOL, TAUNTON.—A new infant school has just been erected in order to provide additional accommodation for the parochial schools of Holy Trinity, Taunton. The architect is Mr. G. C. Strawbridge, and the builder Mr. Wm. Randall.

WESLEYAN DAY SCHOOL, PAULTON, SOMERSETSHIRE.—The memorial stones for this new building have just been laid. The builders are Messrs. Keeling & Sons, Mr. W. F. Bird, of Midsomer Norton, being the architect. The new school will accommodate 300 children. The building is one story in height, and is built of local stone, with freestone dressings. In the suite of rooms there will be three for the mixed school of 184, and two for 126 infants. The three rooms in the mixed department are to be so constructed that they can, by means of folding partitions, be converted into one large room for concerts, public meetings, &c.

THEATRE ROYAL, BARNSLEY.—The corner stones of the new Theatre Royal, Barnsley, were laid. The new theatre is being erected on the site of the old building, and a row of cottages which ran by the side of it. Mr. Walter Emden, of London, prepared the plans, which are being carried out under the superintendence of Mr. H. Crawshaw, Barnsley. The tenders already let amount to about 10,000*l.*, and there are other works to be executed which will bring the total cost to about 16,000*l.* The building will have seating accommodation for 1,400. The stage, as a whole, will have a width of 90 ft. and a depth of 30 ft.

TOWN HALL, ROTHES, MORAYSHIRE.—The foundation-stone has just been laid of the new Town Hall in Rothes. The architect is Mr. Pratt, of Elgin, whose plans were selected in competition. The hall measures about 70 ft. long by 35 ft. wide, and will accommodate 600 people. A circular crush lobby gives entrance to the hall and adjoining anterooms. There will be a supper-room and refreshment-rooms on the ground floor, and ladies' cloak and retiring rooms. At the further end of the hall a small stage will be erected for theatrical and other entertainments, with a store-room underneath and dressing-rooms in the rear. The building is estimated to cost about 2,000*l.*

PROPOSED NEW MUNICIPAL BUILDINGS FOR DUMBARTON.—At a recent special meeting of Dumbarton Town Council, Provost Garvie moved that the Council agree to erect municipal and police buildings on the site provided by Lord Overtoun, and that they approve of the plan prepared and submitted by Mr. Thomson as a general design for such buildings. Bailie Buchanan seconded, and the motion was agreed to.

BATHS, GLASGOW.—The new Corporation Baths, for Maryhill, Glasgow, have just been opened. The buildings have been erected from plans prepared by Mr. M'Donald, the City Engineer, on a corner site with a frontage of 117 ft. to Gairbraid-avenue and 119 ft. 3 in. to Hutcheson-street. The entrances, owing to the fall in the ground, have been made in Hutcheson-street. There are two separate entrances, one to swimming baths and hot baths for males, and one to females' hot baths and public washing-house. The ticket office is situated between the two entrances. The swimming pond is 75 ft. long by 35 ft. broad, and is lined with enamelled brick. There are seventy-two dressing-boxes, shower and foot baths, and lavatory accommodation, also committee-room. A gallery runs all round, and seats

about 300. The roofs are built of steel girders. The walls are all lined with enamelled bricks. There are eighteen first-class and ten second-class hot baths for males, with lavatory accommodation; six hot baths for females, with lavatory. The public wash-house has thirty-six washing stalls, with drying stoves. The outside walls are built with stone from Giffnock Quarries—the front to Gairbraid-avenue having a colonnade with windows to pond-room which are filled with coloured glass. The cost of the buildings will be about 13,500*l.* The contractors were:—Masons, Thaw & Campbell; joiner, John Ross; plumber, James Raeside; gas-fitter, James Telfer; slaters, P. Whyte & Co.; painter, Charles Paton; heating, Bryden & Middleton; boilers, Benman & Co.

CATHOLIC CHURCH, LIGONIEL, IRELAND.—On the 12th inst. a Roman Catholic church was dedicated at Ligoniel. The church has been built at a cost of 8,000*l.*, and the contractors were Messrs. Courtenay & Bros. The architect was Mr. J. J. M'Donnell.

WAREHOUSES AND PREMISES, MANCHESTER.—A new warehouse and shops are being built at the corner of Mount-street and Lloyd-street, Manchester, opposite the Town Hall, and the Corporation, taking advantage of the new building, have arranged for an improved approach into Albert-square. Messrs. Royle & Bennett are the architects, as also of another block of shops and warehouses at the corner of Mosley-street and York-street. Over the way in Mosley-street the new head offices of the Lancashire Mercantile Bank have been completed. Mr. Sankey is the architect. New shops and offices are about to be built in Market-street, near Fountain-street, and Mr. J. W. Beaumont has made the designs of a new warehouse in Dale-street. A new warehouse has been erected for Messrs. Tootal-Broadhurst, Lee, & Company, Limited, in Oxford-street. The building extends from Great Bridgewater-street to the Rochdale Canal, and is of yellow terra-cotta and red brick. The building, of which Mr. J. G. Sankey is the architect, has been set back two yards in Oxford-street.

MIDLAND COUNTIES HOME FOR INCURABLES, LEAMINGTON.—The Lord Mayor of Birmingham laid the foundation-stone, on the 8th inst., of the Victoria extension of the Midland Counties Home for Incurables at Leamington. The new wing will comprise accommodation for thirty-three additional patients, as well as improved quarters for the servants and a new kitchen. The architects are Messrs. W. Henman & Hawley Lloyd.

PROPOSED TOWER, MORECAMBE.—Designs have been submitted for a tower to be erected at Morecambe. A site has been secured in Calton Lodge and grounds, which have a frontage to the promenade between the Central Pier and Emmanuel Church. The proposed tower is to be 232 ft. in height and 130 ft. diameter at the base. In general form it will be a cone, gradually diminishing in diameter, and having four floors above the ground level. A road track, with an electric railway under it, will wind round the outside of the eight principal pillars in spiral form. The top will be readily accessible to pedestrians, the winding roadway, 800 yards in length, being of no greater gradient than one in ten. In the basement is a pavilion, calculated to seat several thousand persons. The plans also provide for the laying-out of the remainder of the grounds with band stand, kiosks, &c. Outside the tower on the ground floor it is proposed to erect shops, with waiting and retiring-rooms. The designer and patentee is Mr. Tom Bradley, architect and surveyor, Bingley, with whom Mr. John Tillotson, auctioneer, Bingley and Bradford, is associated in the undertaking. Messrs. W. H. & A. Sugden, of Keighley, are the architects.

BANK BUILDINGS, DUNDEE.—On the 6th inst. plans were submitted to the Town Council for the new offices of the British Linen Bank at West Port, and were approved. On the ground floor, entering at the corner between Scouringburn and Brown-street, are the banking premises. The flats above the bank office will be approached by a staircase entering from Brown-street, giving access to dwelling-houses. The washing arrangements for the tenants' use will be in the attic, where is also a drying-loft, approached by the main staircase. Cellarage is provided in the basement. Messrs. C. & L Ower are the architects.

PROPOSED TECHNICAL INSTITUTE, TAUNTON.—Colonel C. H. Luard, C.E., an Inspector of the Local Government Board, recently held an inquiry at the Municipal Buildings with reference to an application by the Taunton Town Council to borrow the sum of 1,500*l.* for the purpose of erecting a technical institute on a site adjoining the Municipal Buildings in Corporation-street, and a further sum of 7,500*l.* for the construction of a sewer for the relief of the Rowbarton district from flooding through the accumulation of surface water, which the present sewers are insufficient to discharge. The Town Clerk (Mr. G. H. Kite), the Borough Surveyor (Mr. J. H. Smith), and the Consulting Engineer to the Corporation (Mr. Santo Crimp, of Westminster), gave evidence, and there was no opposition to either proposal.

RESIDENTIAL FLATS, NEWINGTON.—At an ordinary meeting of the Newington Vestry recently, Mr. Henley, on behalf of the Road and Depôt Committee, moved: "That the plan and estimate prepared by Mr. Rowland Plumbe, amounting to 1,897*l.*, for the erection of three residential flats adjoining the Coroner's Court in Manor-place, be approved." An amendment to refer the matter back to committee was lost, and the committee's recommendation was adopted.

PARISH HALL, GATESHEAD.—The foundation-stones of the Parish Hall, in connexion with the Church of the Venerable Bede, Gateshead, were laid recently. The site of the hall is in Wordsworth-street, at the south-west corner of the church. When completed, the main hall, which will be 76 ft. by 36 ft., will accommodate 450 persons; and in the basement there will be a tea-room with apparatus for heating purposes, together with class and club rooms, and a covered archway leading to the church. The total cost of the building will be between 1,400*l.* and 1,500*l.* The architects were Messrs. Oliver and Leeson, and the contractor for the work is Mr. Mauchlan.

COURT-HOUSE AND POLICE STATION, HALIFAX.—The corner stones have just been laid of the new Court-house and police station at Halifax. The exterior of the building is Renaissance in style, freely treated. The Court-house is in the centre of the block, and has open areas on two sides. In every department provision is made for conveniences and cloak-rooms. There is also an open parade ground, a part of which is under cover. A coach-house with four-stall stable is at the back. The magistrates will enter from Blackwall. Here, on the ground floor, are the magistrates' cloak-room, retiring-room, and the lunacy-room. The entrance gives access to a wide staircase leading to the magistrates' retiring-rooms and Court-house. One of the rooms is large enough for use as a subsidiary Court. The solicitors' entrance is also from Blackwall; but their rooms, as well as those for clients and witnesses, front to Ferguson-street, where will be the general public entrance. For the latter a large entrance hall is provided. The gaolers' house and matron's apartments are provided on the ground floor The police entrance is from Carlton-street, and leads into a large entrance hall. The police offices, which front to Harrison-road, are approached by a wide corridor. The charge-room and inquiry office are near the entrance hall, and the cells are placed round the parade ground, which is approached by a special corridor, with prisoners' lobby, search-room, &c. On the right of the entrance hall is a parade-room, and a staircase leads to the first floor, with policemen's lavatories and bath-rooms. The entrance to the warrant office is in Harrison-road, and this leads also to the rooms of the magistrates' clerk, the Chief Constable, and his clerk on the first floor. The total estimated cost is between 13,000*l.* and 14,000*l.* The contractor is Mr. G. Charnock, and the architect is Mr. G. Buckley.

TECHNICAL SCHOOL, HALIFAX.—On the 9th inst. the people of Halifax celebrated the Jubilee of the existence of municipal government in their town, when the formal municipalisation of the technical school took place. The school is situated at the north-west corner of the People's Park. The architects were Messrs. Jackson & Fox. The whole structure was completed at a cost of 15,300*l.*, exclusive of furnishing. A description of the building appeared in our columns at the time of the opening.

PUBLIC OFFICES, NEATH.—New offices for the Neath Rural District Council have just been opened. The buildings have been designed by Mr. D. M. Davies, Surveyor to the authority.

PUBLIC BATHS, NORWICH.—The Norwich Corporation baths will shortly be open to the public, the work of converting the old Museum buildings into bath-rooms and Guardians' offices being all but completed. There are six first-class baths, which are of enamelled white porcelain, and were supplied by Messrs. Twyford, of Hanley, the fittings and engineers' work being done by Messrs. T. Bradford & Co., of Manchester and London. The flooring, together with all carpenters' and bricklayers' work, was entrusted to Mr. H. C. Greengrass, of Norwich, and the plumbing and painting to Messrs. T. Horth & Son. Each room is lighted from the roof. The five second-class baths are smaller than those of the first class, and are of enamelled cast-iron. There are twenty stand-up baths, with hot and cold water and foot-bath. The lower floor has two compartments, one for the boiler and the other for laundry work. There are two tanks on the roofs, each holding about 500 gallons. In winter the building will be heated by means of steam radiators. The work is being carried out under the direction of the Borough Surveyor, Mr. A. E. Collins.

MALDENS AND COOMBE PUBLIC OFFICES.—At their meeting on the 13th inst. the Establishment Committee of the Maldens and Coombe Urban District Council approved of the plans, &c., prepared by Mr. T. V. H. Davison, of New Malden, for the new public offices, central fire station, stabling, mortuary, and post-mortem room.

THE PROPOSED NEW EXCHANGE BUILDING, BIRMINGHAM.—The suggested design for a central Exchange building on the Christ Church site, Birmingham, by Messrs. Henman & Cooper, was approved at a recent meeting held to consider the proposed scheme.

MANSION, TROUP, NEAR ABERDEEN.—Mr. Garden, of Troup, has erected a new mansion on the estate, from designs by Mr. R. G. Wilson, architect, Aberdeen. The house is situated to the south-west of old Troup House. The new residence is two stories and attic floor in height.

ADDITIONS TO THE YORKSHIRE COLLEGE, LEEDS.—The foundation-stone has just been laid of buildings for the leather trades department of the Yorkshire College. The architects are Messrs. Waterhouse & Son. The buildings will contain, on the ground floor, a laboratory fitted with machinery for leather-finishing, and work-rooms for tanning and dyeing. On the first floor there will be research and bacterological laboratories, and the second floor will contain store-rooms and drying accommodation and probably a museum.

THEATRE AND OPERA HOUSE, TAUNTON.—It is stated that theatre and opera house buildings are about to be erected at Taunton. The drawings and plans are being prepared by Messrs. Drake & Pizey, architects, Bristol.

UNIVERSITY EXTENSION COLLEGE, READING.—New buildings for the University Extension College, Reading, have just been opened by the Prince of Wales. We propose to illustrate the building shortly, when a description will be given. Mr. S. Slingsby Stallwood, F.S.A., is the architect, and the general contractors are Messrs. Henry Higgs & Sons, of Reading, Mr. Alfred Holt acting as general foreman. The constructional steelwork and fireproof flooring was by Messrs. Mark Fawcett & Co., Westminster; the wood block flooring was carried out by Messrs. Geary & Walker; the artificial stone staircases by Messrs. Wilkinson & Co., Westminster; the sanitary appliances by Messrs. Bolding & Sons, of London; the heating apparatus by Messrs. Rosser & Russell, Ltd., of Charing Cross; the electric lighting by Messrs. T. C. Williams & Sons, of Reading; steel casements, Mr. J. E. Lucas, of London; and for roof glazing in art rooms, Messrs. Helliwell & Co., Ltd., of London.

BANK, HALIFAX.—The new premises of the Halifax and Huddersfield Union Banking Company have just been opened. All the elevations have been carried out in dressed ashlar from local quarries. The main pediment to the front is supported by four red granite columns. The principal entrance has been made an ornamental feature, and consists of a vestibule, from which is approached two minor vestibules on the right and left. The vestibules are lined with Doulton ware. From the right and minor vestibule entrance is obtained to a public lavatory. A feature has been made in these vestibules of ceramic mosaic pavements. The walls of the hall have been divided into compartments by Corinthian columns, fluted and reeded. The whole scheme of decorative plaster work has been carried out by Messrs. T. Cordingley & Sons, of Bradford. The mosaic pavements have been laid by Messrs. Maw, of Shropshire. On the right hand side of the hall the accountant's rooms are allocated, together with strong-rooms for the books, the bullion, and the plate. The doors for all the strong-rooms have been provided by Messrs. Milner & Son. On the left hand side of the hall, approached through an archway fitted with folding doors, are the manager's room and three waiting-rooms, while adjoining are the directors' board-room and other conveniences. In close proximity to the manager's room is that of the deputy manager, so placed as to overlook the whole of the banking hall proper. On the first floor rooms, which range round the upper portion of the hall on the street sides, are the various store-rooms for books, stationery, &c.; also directors' and manager's rooms. Placed over the strong rooms are the living rooms of the caretaker, having direct access to the back entrance. The side door on the west of the building will be used by the clerks and others connected with the bank. There is a large amount of lead light work in different departments of the bank, by Mr. Reuben Bennett, of Manchester. The wood-block flooring is by Messrs. Steinitz & Jeffries, London; the stained glass in the banking hall is by Mr. Pape, of Leeds, and the following local firms have fulfilled contracts:—Mason's work, Craven Robinson; carpentering and joinering, A. Halstead & Son; plumbing, J. Naylor & Son; general plastering and slating, J. Bancroft & Son; heating apparatus, J. Naylor & Son; electric light, T. Sunderland & Co.; steel roof, J. Hitchen; painting, J. Binns & Son; concreting, J. Greenwood & Son; furnishing, &c., Mr. Greenwood Howarth. The patent glazing of the large roof has been carried out by Messrs. J. Heywood & Co., Huddersfield, and the carver's work has been done by Richard Harvey, Halifax. Mr. W. Clement Williams was the architect.

NEW POLICE STATION, CROOK, DURHAM.—For some months past building operations have been going on in connexion with the erection of a new police station at Crook. The roof is covered with Welsh slates, whilst the exterior is composed of pressed bricks, supplied by Lowry Bros., of Gateshead. The interior comprises a charge-room, three cells, and a prisoners' airing cage. There are self-contained quarters for a resident sergeant and his family. Upon the upper floors will be found quarters for single constables, consisting of mess-room, dormitory, lavatory, &c. The sole contractor is Mr. G. H. Bell, of Bishop Auckland, whose contract is about 1,800*l.* The work is being carried out from plans by Mr. Wm. Crozier, County Architect, Durham. The sub-contractors are Mr. S. Kirby, plastering and cementing; Mr. Hudson, car-

pentry and joinery work; and Mr. Ed. Thompson, plumbing, all of whom belong to Bishop Auckland. The clerk of the works is Mr. Kilburn, of Durham.

PROPOSED PUBLIC BATHS, BOLTON.—The Bolton Corporation propose spending the sum of 5,250*l.* in the erection of public baths, on a site adjoining the branch Public Library in High-street. In the basement there will be a boiler-house, coal cellars, cistern-room, and an open gangway round three sides of the bath. The ground floor will contain a plunge or swimming bath, 75 ft. by 26 ft. It will have glazed brick sides and a tiled bottom. The dressing boxes number thirty-nine, and there is also an attendant's room, besides soap and shower baths, and conveniences. Circular staircases will lead to the gallery, which extends round three sides of the bath. The entrances are arranged so that they are controlled from the ticket office. The men's slipper baths—nineteen in number—are on the left of the entrance, there being close by a waiting-room as well as needle and vapour baths. On the first floor of the building are the slipper and other baths for women. A caretaker's house and a laundry have been provided. The building generally has been designed to harmonise with the Free Library adjoining, and will be of red brick with ornamental red terra-cotta dressings. The architect is Mr. R. Knill Freeman, of Bolton.

MASONIC HALL, ROTHERHAM.—On the 2nd inst. a new Masonic Hall at Rotherham was consecrated. On the street level are three shops. An arcade leads to a large public hall, 52 ft. by 38 ft., exclusive of a recessed stage for orchestra. The hall will seat 370 persons. Ante-rooms and cloak-rooms are provided, and a side gallery over the corridor forms a promenade, and leads to a supper-room capable of seating 100 persons. Over the shops and café are three offices and a work-room. The second floor comprises the Masonic rooms, consisting of a lodge-room 33 ft. by 24 ft., a large ante-room, and a supper-room. Accommodation for a caretaker is provided on the third floor, and a lift from the kitchen communicates with the various supper-rooms and corridors below. The front elevation of the building is of Stoke stone. The work has been carried out by Mr. Richard Snell, of Rotherham, from the plans and under the superintendence of Mr. E. I. Hubbard, of Rotherham.

SANITARY AND ENGINEERING NEWS.

LUMLEY RIVER BRIDGE.—The Earl of Scarborough, having decided to erect a bridge across the River Wear, adjoining the existing ferry at Lumley Bridge, instructed Messrs. D. Balfour & Son, civil engineers, of London and Newcastle-on-Tyne, to prepare plans for a suitable structure, the contract for which has been let to Messrs. Head, Wrightson, & Co., of Stockton-on-Tees, who expect to start the work this month. The structure consists of a central span of 120 ft., and two side spans, each 37 ft. long. The main and approach girders are to be of mild steel lattice work, the bottom flanges being efficiently wind-braced, and the top flanges supported with struts and overhead arches. The flooring is to consist of creosoted timber, with water board at each side. The piers to be each composed of four wrought-iron piles properly braced, formed of four segments rivetted together, having cast-iron pile points, and to be driven 21 ft. below river-bed. Gates and turnstiles are to be fixed at the end of the bridge, and proper lighting arrangements to be provided. The structure is calculated to stand a safe distributed live load of 140 lbs. to the square foot, with four times this amount for the ultimate load.

EXTENSION OF THE LANARKSHIRE AND AYRSHIRE RAILWAY.—At Lugton, Ayrshire, the first sod was cut on the 6th inst. of an extension of the Lanarkshire and Ayrshire Railway, which is to connect, by a direct route, the port of Ardrossan with the coal and iron producing districts of Lanarkshire. The engineer of the line is Mr. Charles Forman (of Messrs. Formans & M'Call), and the contractors are Messrs. R. M'Alpine & Sons.

SEWER, NEWCASTLE-ON-TYNE.—On the 9th inst. Mr. F. H. Tulloch, M. Inst. C.E., Local Government Board Inspector, held an inquiry in the Council Chambers, Newcastle, into the City Council's application for sanction to borrow 6,500*l.* for works of sewage and 833*l.* for works of refuse disposal. The Town Clerk (Mr. Hill Motum) said the 6,500*l.* was required for the construction of sewers on the east and west sides of the Ouseburn to carry to the river the sewage now discharged from several large sewers into the open burn. It was proposed to lay two sewers on the east side and two on the west side of the burn. The Ouseburn had really been an open sewer; and, in the interests of public health, it was necessary to divert the sewage from the burn into common sewers.

PROMENADE FOR GRANGE-OVER-SANDS.—The Grange-over-Sands Urban Council have adopted plans, and are making application to the Local Government Board for powers to borrow 10,000*l.*, to carry out improvements which have been under consideration for three and a half years. It is proposed that the sewage which now drains upon the foreshore at various points shall be collected and carried beyond the town along the railway embankment, outside which will be erected a promenade. The new sea wall will reclaim 5¾ acres of land, which will probably be used as a recreation ground.

PUMPING STATION, RUSKINGTON, LINCOLNSHIRE.—At the last monthly meeting of the Ruskington Urban Council, plans were submitted by Mr. J. Clare, C.E., for a tower pumping station, &c., at a cost of 1,709*l.* The plans were adopted.

REBUILDING OF THE MILL BRIDGE, DONCASTER.—Mr. H. P. Boulnois, an inspector of the Local Government Board, held an inquiry at Doncaster on the 7th inst. with respect to an application to approve of the borrowing of 5,500*l.* to defray a proportion of the cost of the reconstruction of the Mill Bridge.

SEWAGE DISPOSAL, MANCHESTER.—The Rivers Committee of the Manchester Corporation have selected three gentlemen to advise them in the matter of sewage disposal—namely, Mr. Baldwin Latham, C.E., Dr. W. H. Perkin, Professor of organic chemistry at Owens College, and Dr. Percy Frankland, of Birmingham.

NEW PIER, HERNE BAY.—A new deep sea pier is being constructed at Herne Bay. The old pier ran out to a length of only 400 ft., and was left at low tide high and dry. It has now been lengthened by the addition of 3,320 ft. In the new structure there are eight alcoves where the width is 30 ft., and at two points the pier is widened to 66 ft. The pier head when completed will be 76 ft. wide, and will carry an octagonal pavilion 40 ft. wide. Beyond this there will be an independent timber landing stage for the steamers. The pier is built on screw piles entering about 10 ft. into the sea bed, the superstructure being of steel, with a wooden deck which is 14 ft. above the highest water. Mr. E. Matheson is the engineer. An electric tramway runs the whole length of the pier.

BARMOUTH WATER SUPPLY.—On the 11th inst. the new water supply for Barmouth was formally opened by Mr. T. W. Russell, M.P. The new water scheme was designed by Messrs. Thomas Roberts & Son, of Portmadoc, and the works have been carried out under their control and superintendence. The lake (Bodlyn) has an area of thirty-one acres at summer level 1,250 ft. above Ordnance datum. A masonry dam 380 ft. in length has been made across the outlet, 13 ft. in height above summer level, raising the lake 10 ft., and increasing the area from thirty-one to forty-five acres. The storage capacity is 100,000,000 gallons, of which 52,000,000 gallons are for the supply of Barmouth and district, and 48,000,000 gallons compensation water to pass down the river for the mill and riparian owners. The right has been acquired of raising the lake another 3 ft., which would increase the storage capacity 35,000,000 gallons. The service reservoir at Eithinfynydd has a capacity of 106,500 gallons. Before entering the reservoir the water is passed through a Halliday's patent charcoal steel cylinder filter, capable of filtering 240,000 gallons a day. The old works at Ceilwart are incorporated with the new works. The total cost of the undertaking has been 29,981*l.*

STAINED GLASS AND DECORATION.

WINDOWS, CRATHIE CHURCH.—Two memorial windows have just been placed in Crathie Church, Deeside. One is her Majesty's memorial to the late Duke of Clarence and Avondale. The other window, which has been publicly subscribed for, is being fixed in Crathie Church to commemorate the sixty years' reign. The work has been carried out by Messrs. Clayton & Bell.

MEMORIAL WINDOW, SOUTH HEIGHAM, NORWICH.—A stained glass memorial window has just been erected at the Church of Holy Trinity, South Heigham. It is from the studio of Mr. W, R Weyer, of Norwich.

WINDOWS, ST. STEPHEN'S CHURCH, BRISTOL.—Two memorial windows have just been dedicated at St. Stephen's, Bristol. The windows are fixed in the north aisle. Each window is of three lights. The windows are the work of Messrs. Clayton & Bell, London.

FOREIGN.

FRANCE.—The Paris Municipal Council has voted a sum of money for the erection of a monument to be placed in Père la Chaise, to the unrecognised victims of the Charity Bazaar fire.——It is announced that M. Rodin, the sculptor, has written to the Committee which has been formed to purchase the Balzac statue (which was refused by the Société des Gens de Lettres) saying he does not wish for this mark of sympathy, and intends to keep the statue himself.——Last Sunday the monument to the memory of M. Flachat, engineer, was inaugurated in the Boulevard Pereire: it is the work of Alfred Boucher, sculptor, and Gaston Trélat, architect.——Preparations are being made for the erection of a large Palais des Fêtes in the Bois de Vincennes for the 1900 exhibition.——The work of deepening the port at Dieppe is soon to be begun. The expense is calculated at 150,000 francs.——M. de la Rocque is appointed Diocesan Architect at Coutance in place of the late M. Petitgrand; M. Darcy is appointed Diocesan Architect at Nevers, in place of M. de la Rocque; and M. Nizet is elected at Langres in place of M. Darcy.——M. Marmottin, architect, of Coulommiers, has just been elected for three years Président of the Société des Architectes of Seine et Marne.——M. Boulin, architect, of St. Etienne, has been elected President of the Société des Architectes de la Loire.——There is a question of erecting a statue of Viollet-le-Duc at Carcassonne.——The jury of the open competition for the building of a Chamber of Commerce at Grenoble have awarded the prize to M. Revol, architect, of Tencin (Isère).——The death is announced, at the age of 49, of M. Charles Michel, architecte-verificateur of works at Paris.——M. Auguste Truphême, an artist of great talent, has just died in Paris, at the age of 62. He was born at Aix (Bouches du Rhône), and had for his masters Hippolyte Flandrin, Henner, and Bouguereau. He first exhibited at the Salon of 1865, and for several years he made a specialty of scenes from life, taken in the Paris schools, where he superintended the Cours de Peinture. He received medals at the Salons of 1884, 1888, and 1889; in 1895 he received the Legion of Honour. He sent this year two remarkable portraits to the Salon des Artistes Français.

MODEL DWELLINGS, VIENNA.—In the Jubilee Exhibition at Vienna the plans drawn by Messrs. Theodor Bach and Leopold Simony, under the auspices of the new "Franz-Josef I. Jubilee Institution for the erection of dwellings for the people," are on view. The total area—some 50,000 square mètres—is divided into five blocks, and the buildings are to be erected gradually, in order to give the builders of the later buildings the advantage of experience derived from observation on the building and letting of those to be the first erected. Of the entire surface, 18,326 square mètres are to be built over; 24,053 are to be devoted to gardens; and the remaining 6,690 to the necessary streets and communications. The first group of buildings is to be put in hands next month. It will consist of ten three-story dwelling houses, eight of which are to contain apartments for in all about 130 families; a ninth will contain room for about eighty single men; while the tenth will accommodate about forty single women and girls. It has been decided that the second group shall consist of 237 dwellings of different sizes, occupying 3,629 square mètres in all, with 4,258 square mètres of garden associated. Of these 28 shall consist of hall, kitchen (8 mètres square), and small room (8 to 10 mètres square); 146 shall have a larger chamber (16 to 20 mètres) instead of the small one; 52 shall further have a small chamber in addition, and 11 shall have two large chambers. A larder will be provided to each kitchen, and a watercloset, gas, and water provided to each dwelling. "Borrowed lights" will be avoided. In time a steam-laundry, a crèche, recreation and play grounds, a public bath-house, library and reading-room will be added to the colony. Notwithstanding all these improvements, the rent shall not exceed that customarily paid on the selected site, and the rights of permanent tenants to improvements effected by themselves will be safeguarded. The funds at present at the disposal of the institution exceed 600,000 florins. They hope, however, continually to increase their sphere of influence, and look for important results from their labours.

AUSTRIA.—The town of Baden has decided to pull down the old theatre and build a new one at an estimated cost of 250,000 florins.——The Imperial Minister of War has decided in favour of erecting the new school for artillery cadets at Traiskirchen, near Baden. The building will be adapted for 800 pupils and 40 officers, and will cost 2,000,000 gulden.——As a memorial of the Imperial Jubilee the Council of Wels has resolved to found an institution to be called "The Home of Age," to receive impoverished citizens of the town and to provide shelter and support for them. A committee has been appointed to settle on the plans and the regulations, and to make all necessary further arrangements. A site has been selected at the corner of the Dr. Johann Schauer Strasse and the Stelzhammerstrasse, and a grant of about 50,000 florins from the city hospital fund set aside for building purposes.——The ground between the Traunleiten and the Salzburgerstrasse, Lambach (near Gmunden), has been purchased by the community for the erection of a district of villas. The work of canalising the watercourses, and laying out streets and roads, is going on with all haste, as well as the arranging the water-supply, and will soon be finished; after which the erection of villas on the sites will at once be commenced.——The Union of Timber Merchants have forwarded a petition to the Imperial Minister of Railways that a station for timber, with a yard annexed, be added to the Vienna railway station.——A military hospital is to be erected in Neustadt, with accommodation for eighty men and thirty officers, as a Jubilee memorial. Professor Franz Ritter von Gruber, Vienna, is to be the architect. It is proposed to lay out the sum of 160,000 to 180,000 florins in the work. The hospital will be erected in a large garden, in which, in time of war, a hospital barracks can be erected.

GREAT NORTHERN AND CITY RAILWAY COMPANY.—A company under this title has just been formed for making a line, about three miles in length, from the Finsbury-park station of the Great Northern Railway to Moorgate-street. There will be three intermediate stations at Drayton-park, Essex-road, and Old-street, and the line will supply a more direct and much-needed communication between the City and the suburban system of the G.N.R. Sir Douglas Fox and his brother, Mr. Francis Fox, are the engineers for the new works.

MISCELLANEOUS.

APPOINTMENT.—At a recent special meeting of the Winsford Urban Council, Mr. Hulse, contractor and builder, of Winsford, was appointed Surveyor to the authority. There were forty-five applicants for the post.

THE PATENT OFFICE REPORT.—The fifteenth annual report of the Comptroller-General sets forth that the applications for 1897 amounted to 30,958, whereof about 6,000 related to inventions connected with cycling: women inventors contributing 702 (or nearly 2·3 per cent. of the gross total), including 106 for cycling and about 148 for articles of dress. The increase for the year 1897 is 765, or 2·5 per cent., as compared with an increase in the preceding year of 5,131, or 20·5 per cent. It appears that the growth in 1897, whilst less in quantity, is of a more substantial quality than the increase in 1896, for in that year the large increase was mainly in applications lodged in a provisional form, whereas last year it was mainly in applications accompanied by completed specifications, rising by 677, or 14 per cent., and those deposited with provisional specifications rose by only 88, or 0·3 per cent. The rate of increase since 1893 proves to be less constant than before. The number of applications (25,386) almost stationary in 1894, fell to 25,062 the next year, rose to 30,193 in 1896, and rose again, albeit slightly, in 1897. Yet the average increase for the four years, taken together, gives the normal average, namely, 5·7 per cent. On the reduction of the initial fees from 25*l.* to 4*l.*, under the Act of 1883, it was thought probable that the average value of the granted patents would diminish, owing to the facilities conceded for patenting minor and trivial inventions. The expectation is, in a measure, realised; the percentage of sealed patents that run for fourteen years has fallen from 6 to 4·5 per cent.; yet, whilst the ratio is smaller, the actual number of patents continued for their full term is considerably larger than it was before. An appendix to the Report shows that England and Wales were less inventive in 1897 than in 1896, and that the additional applications came chiefly from Scotland, Ireland, the United States, the Continent, South Africa, and Victoria, Tasmania, and New Zealand. Of foreign applications the largest number came from Germany and the United States, being 2,459 and 3,084, as compared with 2,172 and 2,725, respectively, in 1896. The Free Technical Library reckons 111,439 readers, a decrease of 1,956, of whom 35,328 availed themselves of its use after 4 p.m. The western portion of the buildings, facing Staple Inn, was completed in 1897. The whole cost of the new office (including purchase of the site and 4,050*l.* on account of furniture) is estimated at 161,500*l.*, of which sum about 90,000*l.* is already expended. Receipts from the sale of official publications amounted to 8,564*l.* (an increase of nearly 900*l.*), paid over to the Stationery Office. Those from various sources on account of trade marks amounted to 10,397*l.*, and from designs 3,724*l.*—the total for the twelve months being 223,536*l.* 3s. 10d., yielding a surplus of 111,299*l.* 17s. 10d., after payments that comprised 57,022*l.* 5s. for salaries, 29,100*l.* for printing and lithographed drawings, and 14,279*l.* 18s. 6d. for building works. Mr. Dalton concludes his report with a graceful and well-deserved tribute to the labours of his predecessor in office, Sir Reader Lack, who retired in April, and under whose able administration the business of the Patent Office has attained to its present large proportions.

ELECTRIC LIGHTING, STOCKTON.—On the 9th inst., Mr. H. P. Boulnois, C.E., Inspector under the Local Government Board, held an inquiry at the Stockton Town Hall into the application of the Corporation for permission to borrow money to establish an electric installation within the borough. The proposal is to instal the light through Horton-road, High-street, and Bridge-road, and to make provision also for cables being carried to by-streets. Borrowing powers to the extent of 30,000*l.* are asked for, and it is proposed to spend 22,000*l.* of this sum at present.

THE CONTROL OF PUBLIC MONUMENTS.—In the House of Commons on the 10th inst., Sir Elliott Lees asked the First Lord of the Treasury whether, seeing that any memorial which, in pursuance of the resolution of the House and at the public charge, may be erected to Mr. Gladstone in Westminster Abbey would so soon as erected be entirely under the control of the Dean and Chapter of the Abbey, and might at any time be removed or altered by them without the sanction of the House, in like manner as memorials similarly erected by Parliament in St. Paul's Cathedral had been removed and altered, he would grant facilities this Session for the passing into law of the National Monuments in Churches Bill, which was intended to prevent the removal or alteration, unless Parliamentary sanction be first obtained, of monuments erected in churches or cathedrals out of public moneys in pursuance of a vote by Parliament. Mr. Balfour: I suppose that my hon. friend in putting this question has in mind the matter in which he took a strong personal interest in regard to a monument in St. Paul's Cathedral. I do not think there is any imminent danger that the Dean and Chapter are likely to interfere with the monuments in Westminster Abbey, and therefore the danger to which he alludes cannot be described as a pressing one. Sir Elliott Lees: Has the right hon. gentleman realised that a future Dean and Chapter may possibly take steps to remove monuments? No answer was returned.

BRITISH ARCHÆOLOGICAL ASSOCIATION CONGRESS.—The Annual Congress—the fifty-fifth—of this Association will be held at Peterborough this year, from Thursday, July 14, to Wednesday, July 20, with the 21st as an extra day. The headquarters will be the Grand Hotel. The following papers have already been promised:—"Lathom Hospital and its Early Statutes," by Lord Melville; "The History of Ramsey Abbey as Illustrated by the MSS. in the British Museum," by Dr. W. de Gray Birch, F.S.A.; "Yaxley and Fotheringhay Churches," by Mr. H. M. Townsend; "The Gentlemen's Society in Connexion with Peterborough," by Mr. C. Dack, local hon. secretary; "Castor Church," by Mr. J. C. Traylen; "The Roman and Saxon Occupation of Peterborough," by Mr. T. J. Walker; "Maxey Church," by the Rev. W. D. Sweeting; "Northborough Church and the Cromwells," by the Rev. H. J. D. Astley; "The Crosses of Fletton and Helpston," by Mr. C. Lynam; "Bury Church, Hunts," by Mr. J. A. Poulter; "Crowland and the Legend of St. Guthlac," by Miss E. Bradley; and "Notes on the Fenlands," by Professor T. McKenny Hughes. Papers will also be contributed by Mr. G. Patrick, hon. secretary, Mr. W. Bodger, local hon. secretary, and others. Visits will be made on Friday, July 15, to Glatton, Little Gidding, Connington Castle, Yaxley Church, and Fletton Church and Cross; on Saturday to Stamford (where the churches, &c., will be described by Mr. Traylen, architect, of Stamford; Burghley House will be described by Mr. J. A. Gotch, F.S.A.); on Monday to Spalding; on Tuesday to Thorpe Hall, Castor, Wansford, Whittering, and Barnack; on Wednesday to the Manor House of Woodcroft, Helpston Church and Cross, Maxey Church, Deeping St. James, Glinton Church, Northborough Church, and Peakirk Church. It is proposed to visit on Thursday, July 21, Fotheringhay Church and the remains of the Castle, Cotterstock Church, and Apethorpe Hall and Stibbington Hall.

MEMORIAL DRINKING FOUNTAIN, HAMPTON WICK.—The Hampton Wick permanent memorial of the sixtieth year of the reign of Queen Victoria took the form of a drinking fountain. It has been placed in the High-street, at its junction with Park-road. It is from the design of Mr. H. C. Fread, of East Molesey. There are taps, basins, and drinking cups on three sides of the shaft, and at the back is a drinking-trough for horses, with one for dogs underneath. The whole stands on slabs of York stone, and is approached by two steps. Messrs. Welbelove & Sons, of Kingston, carried out the work.

STATUE OF WHITGIFT FOR CROYDON.—A statue of Archbishop Whitgift has been placed on the pedestal left vacant by the architect, Mr. Henman, on the corner of the Corn Exchange in Katharine-street, Croydon. The statue is the gift of Sir Frederick Edridge. It is of Portland stone, and is the work of Mr. J. Wenlock Rollins.

CARDIFF BUILDERS' OBLIGATIONS.—At a meeting of the Cardiff Public Works Committee recently, a letter was read from Messrs. Veall & Sant, architects, inquiring "by what authority" they were asking, through their inspector, that the original plans of certain buildings in Norfolk-street should be kept on the building. It appears that by the regulations of the Public Works Committee a plan of buildings in course of erection is required to be kept on the premises. In this particular instance, Inspector Fitzgerald on calling to inspect buildings, of which Messrs. Veall & Sant are the architects, was referred for the plans to the architects' offices. Mr. Harpur pointed out that the plans were ordered to be kept on the building in order to facilitate the inspector's work. That was the first objection to the rule that had come under his notice. Mr. Veall maintained that the rule was not insisted on in other cases, and explained that the exposure of valuable plans on the building entailed needless expense, seeing that copies could be seen either at the office of the architect or the Borough Engineer. The matter was referred to the consideration of the Borough Engineer.—*South Wales Daily News.*

PLYMOUTH ARCHITECTS AND THE CORPORATION.—The concession made by the Town Council to the local architects who were invited to send in competitive designs for the buildings to be erected in Tavistock-road and Tavistock-place did not meet the whole of the grievances. It was decided last month to increase the premium for the best design from 150*l.* to 250*l.* The architects replied to this by an expression of regret that the main point of their objection to the condition had not met with a more favourable reception. The Town Clerk was thereupon requested to ask whether, if the Special Works Committee were prepared to consider the suggestion submitted, the architects would waive their requirements in relation to the appointment of a professional assessor. To this the architects replied unanimously declining to compete unless a professional assessor was appointed. The committee resolved that the views of the architects be met to the following extent:—A professional assessor to be agreed to, provided the plans become the property of the Corporation, the premium to the successful architect to be 250*l.*, and competitors to be instructed that the rents to be catered for are to be about 100*l.* per annum, with the exception of the two end sites, which are to be specially treated. The remuneration of the assessor is to be fifty guineas. The Town Clerk is to obtain the views of the architects upon the offer as it now stands, with a view to obtaining the sanction of the committee to the selection of an assessor.—*Western Morning News.*

LIVERPOOL SCHOOL OF ARCHITECTURE AND APPLIED ART.—The annual exhibition of students' work in connexion with the City of Liverpool School of Architecture and Applied Art was opened on the 11th inst., in the applied art building, University College. The exhibits include architectural drawings and designs, designs in clay of figures and ornament, and modelling from the cast, life drawings, and many designs for mural decoration, friezes, panels, wall papers, &c.; several examples of brass and copper work, wrought iron and wood carving. The following is a list of prizes awarded, those for the architectural department not being settled, as the session is not yet finished:—Modelling.—Life, day: 1, G. A. Williams; 2, C. Jackson. Life, evening: 1, J. H. Morcom; 2, G. A. Williams. Special figure from life: W. Wilcoxson. Special ornament from cast: R. Murray. Design in clay competition: 1, J. Griffiths; 2, G. A. Williams. Term's work: 1, T. Rowan; 2, T. Evans. Drawing and painting.—Figure from life, day: G. A. Williams; evening, H. Carr. Set of designs, day: E. Jackson and H. Lister; evening, G. Behrend. Drapery: R. P. Roberts. Design of ornament, day: M. Herbert; evening, 1, C. A. Walker; 2, M. Collins. Wood-carving.—Term's work: 1, F. J. Stephens; 2, J. Nicholas; 3, L. Cheetham. Wrought iron.—Term's work: 1, G. H. Vogt; 2, W. Hawthorne. Brass and copper.—Term's work: 1, C. E. Thompson; 2, H. Eckstein; special, E. C. Woods. Furniture construction.—Term's work: F. H. Keeling, H. Tapson, H. Davies, and J. W. Jones, hon. mention.

DISTRICT SURVEYORS' ASSOCIATION.—The members of this Association dined together on the 14th inst. at the Café Royal, Regent-street. The chair was taken by Mr. Gundry, the President of the Association, supported by Messrs. Tabberer, Waller, Payne, Carritt, Chester, Collins, Crow, Elkington, C. F. Hayward, Hardcastle, Lovegrove, Marsland, McDonell, Notley, Spiers, Tanner, A. Williams, Willis, and others. Among the guests were Sir Geo. Fardell, M.P., Messrs. Harben and Robinson, of the London County Council; Messrs. Cates, Penfold, and Hudson, of the Tribunal of Appeal; Messrs. Blashill, Hebb, and Thomas, of the Superintending Architect's Department; and Mr. J. W. Godfrey, of the Solicitor's Department; Mr. T. W. Wheeler, Q.C., and Mr. W. Emerson, hon. sec. of the R.I.B.A.

LISKEARD CHURCH TOWER.—The response to the petition of the vicar and churchwardens of Liskeard for a faculty from the diocesan authorities, to enable the dilapidated tower of the parish church to be rebuilt, was received on the 11th inst. It will appear from it that the diocesan authorities have consented to permit the rebuilding of the tower of Liskeard Church, but we learn that a somewhat stringent condition is attached. In a letter from the Registrar, which accompanied the citation, the following passage occurs:—"The Chancellor will make it a condition of granting the faculty that the work is not to be commenced until at least 2,300*l.*, including the legacy mentioned in the petition, has been received or promised." This condition, the Registrar adds, is in accordance with the practice of the Chancellor's Court.—*Western Morning News.*

THE WESTFIELD SCHOOL CONTRACTS, ABERDEEN.—Sheriff Mitchell heard parties in the Aberdeen Sheriff Court recently in the action at the instance of Messrs. Pringle & Slessor, builders, against the Aberdeen School Board for 600*l.* in respect of alleged breach of contract by the defenders in connexion with the erection of Westfield School. The question before the Court was whether or not the pursuers' statements of loss and damage were definite and sufficient enough to be allowed to go to proof. Mr. A. Knox, for the defenders, held that the case should go to proof, but before that was done he was entitled to get something more definite as to the items of loss, and how the 600*l.* claimed for was made up. Of course, he reserved, meantime, the question of whether or not there was a breach of contract, though defenders maintained that there had been no such breach. Mr. G. R. Cowie appeared for the pursuers, and said he declined to give further specification of damage. He understood that the cases were to go to jury trial, and it would be for the Judge then to say whether the damage attempted to be proved was relevant or irrelevant. His prophecy in respect to the case was that the School Board would pay up, as they had already offered so much. The Sheriff took the case to avizandum.—*Aberdeen Weekly Free Press.*

PARIS EXHIBITION OF 1900.—The Royal Commission are now prepared to circulate information respecting the Exhibition. The classification and rules for exhibitors, together with forms of application for space, can be obtained by applying to the Secretary of the Royal Commission, Paris Exhibition 1900, St. Stephen's House, Westminster, S.W.

CARPENTERS AND JOINERS.—The June report of the Amalgamated Society of Carpenters and Joiners states that the only feature of interest in the work of the last month was the continued success which had attended the efforts of the members to effect satisfactory settlements of their trade movements. From a large number of English towns reports of

increased wages and other improvements had been received. No fewer than nineteen branches send in resolutions bearing on the question of federation. In every case strong disapproval of what is known as "the official scheme" is expressed, and the trend of opinion is decidedly in favour of having a ballot on the various schemes now before the country, and not for or against the official scheme alone. The majority of the branches state that they are in favour of the "Clarion" scheme, or alternatively some scheme including the benefits which in their opinion it would confer on the workmen.

FOREST GATE AND UPTON PARK. — Messrs. Tuckett & Son offered by auction the "Princess Alice Hotel," Romford-road, on the evening of Thursday, the 9th inst., a further portion (being their fourteenth sale) of the Plashet Hill estate, belonging to the trustees of the late Mr. John Gurney, comprising ninety-six lots in Halley-road, which realised from 66*l.* 10s. to 72*l.* 10s. per lot; and thirty-six shop lots in Red Post-lane, which made from 105*l.* to 115*l.* per lot. The whole of the 132 lots were disposed of for a total closely approaching 10,500*l.* This result shows a marked appreciation in values consequent upon the rapid development of the neighbourhood. The auctioneers have now sold about 1,860 lots upon this portion of the Gurney estate, and hundreds of houses have been built and occupied, and many more are in course of erection.

HONORARY DEGREES AT CAMBRIDGE. — On Wednesday honorary degrees were conferred at Cambridge upon a number of distinguished persons, including Sir E. J. Poynter, P.R.A., and Mr. F. C. Penrose, M.A., F.R.S. Mr. Penrose, Honorary Fellow of Magdalene College, late President of the Royal Institute of British Architects, and first Director of the British School of Archæology at Athens, was welcomed back to his University as one who had taken his degree in Mathematical Tripos of 1842, and who had thrice rowed in the University Boat race some seven and fifty years ago. He had next been sent by Cambridge to travel in Italy and Greece, and had published the results of his researches in an important work on the "Principles of Athenian Architecture." He had been the first to prove that the bounding lines of the columns and architrave of the Parthenon were not straight but slightly curved. He had recently spent much ingenuity on his inquiry into the orientation of Greek temples. He had also been surveyor of the fabric of St. Paul's Cathedral, and was probably the only man living who had stood not only on the summit of St. Paul's, but also on that of the Olympieum at Athens. "Viro ad tantam altitudinem evecto non sine reverentiâ quâdam in hoc templo honoris lauream nostrum laeti decernimus."

PUBLIC IMPROVEMENTS IN MANCHESTER.—On the 3rd inst. Mr. George W. Willcocks held an inquiry at the Town Hall, Manchester, on behalf of the Local Government Board, into the application of the Corporation for sanction to borrow 6,000*l.* for the execution of a scheme for providing new dwellings for persons residing in certain houses proposed to be taken down. Mr. T. Hudson (Deputy Town Clerk) appeared on behalf of the Corporation, and amongst those present was Mr. Meade (City Surveyor), and other officials. Mr. Hudson said the object of the inquiry was to deal with the obligation of the Corporation to make provision for the accommodation of persons of the labouring class who had been displaced, or would be displaced, by the carrying out of certain public improvements. The houses were in Miller-street, Shudehill, Moston-lane, and Grey-street, and they were twenty-two in number. The Corporation proposed to erect the same number of houses in Miles Platting. Each house would contain three rooms up and three rooms downstairs. They were estimated to cost 205*l.* each. There was no opposition.

THE NEWCASTLE BUILDING TRADES EXCHANGE, LIMITED.—In March last reference was made to a proposal to establish a builders' exchange in this district. Now the project is an accomplished fact, and an institution under the title of the Newcastle, Gateshead, and District Building Trades Exchange, is being carried on by a limited liability company. The list of subscribers is an influential one, and the executive appears to be representative of all the branches of the building trade. Rooms have been secured at 62, Grainger-street. Certain parts of the premises will be set apart as sample rooms, to enable merchants and others to exhibit their goods. The company was registered on April 28 with a capital of 10,000*l.* in 1*l.* shares; but it is only proposed to issue about 500 shares, as that number will be sufficient in the meantime to provide working capital. Nearly 350 of these shares have already been taken up, and the membership is over eighty.—*Newcastle Journal.*

MEMORIAL TO THE LATE DEAN VAUGHAN, LLANDAFF CATHEDRAL. — An appeal is made for contributions towards a sum of 300*l.*, supplementary to the 500*l.* already subscribed, for the erection of a memorial to the late Dean Vaughan. We gather that it will take the form of a recumbent effigy, to be sculptured by Mr. Goscombe John.

ST. HILDA'S SETTLEMENT, SHOREDITCH. — We understand that Mr. Philip Day, as honorary architect, prepared the plans and designs for a building, to be known as "St. Hilda's," for purposes of the Home established and maintained by a guild of past members of Cheltenham Ladies' College. The house provides apartments for sixteen ladies, and the furniture was designed by the Arts and Crafts Society, of Essex House; it occupies the site of the "Old Jago," in Nichol-street. The Settlement, whose work is not limited to a particular parish, was originally established in 1890 at Mayfield House, Bethnal Green, in association with some ladies from Oxford; the latter section removed to a separate Home, St. Margaret's, and the Cheltenham ladies, having to vacate Mayfield House, raised a sum of 4,000*l.* for St. Hilda's, which was opened recently.

RELIEF MAP OF LONDON AND SUBURBS.—Mr. E. Stanford sends us a "Geological Model of London and the Suburbs," in other words a map in relief of the surface of London and the surrounding district, to the extent of 320 square miles. The map is on a scale of 1 in. to a mile horizontally, and 1 in. to 1,000 ft. vertically; it is coloured to show the surface formations, and is accompanied by a contour section on one margin, and some sections of strata at different borings on the other margin. The geology has been compiled from the maps of the Geological Survey. The model was originally made in contours of cardboard, and was reproduced by Messrs. Huntley, Boorne, & Stevens, of Reading, in thin tinned steel plate. It forms an exceedingly useful explanatory model of London and the district around.

BISHOPSWOOD, HEREFORDSHIRE.—This property will be offered for sale at the Mart on the 23rd instant. It is distant five miles south from Ross, in the parishes of Ruarden and Walford—the Walec, or Welsh, ford from Goodrich across the Wye, and overlooks the vale of that river. The property, extending over 2,000 acres in all, in the midst of woodlands, hills, and rocks, was formerly a demesne of the Bishops of Hereford, and a preceptory of Flanesford Priory founded near Goodrich Castle by Richard, Lord Talbot, in 1347 for canons regular of St. Augustine. The Foleys established in Bishopswood, *temp.* Charles II., blast furnaces for casting pig-iron, which were ultimately sold by Thomas, second Marquis of Bath, in 1801, to William Partridge; he and his brother John were leading iron-masters in the country. The latter's son, John, built the house in 1829, which was extensively restored after a fire about twenty-five years ago, and now belongs to Mr. H. L. Blundell McCalmont, M.P. The house contains in the central hall a gallery and a staircase removed by Mr. McCalmont from the old Manor House, Wandsworth. The staircase, illustrated in our issue of August 24, 1889, has carved oak spiral balusters, with newels in the shape of fluted Corinthian columns, and a carved oak panelled wall dado, the panels being framed in Corinthian pilasters. The carving is attributed to Grinling Gibbons, as is also the wood screen from the foot of the staircase, which is now in the billiard-room at Bishopswood. On January 8, 1891, were sold for about 370*l.*, the materials (timber included) of Wandsworth Manor House, which, it appears, was built for one Peter Paggen, *ob.* 1720. The design has been ascribed, but without authority, to Wren, whilst many aver that it formed the home, during several years after her marriage, of the Princess, afterwards Queen, Anne.*

CAPITAL AND LABOUR.

THE BRADFORD BUILDING TRADE.—On the 6th inst. a settlement was effected of the dispute which has existed for some weeks between the masters and men in the joinering branch of the building trade. A meeting of the masters was held in the Stone Exchange, and simultaneously a meeting of the men took place at the Dyers' Club-rooms, Barry-street. The masters re-endorsed their decision arrived at previously to offer the men the increase of wages of one halfpenny per hour, which was demanded, on condition that the demand for a shortened day's work in winter was withdrawn. This offer of a compromise was submitted to the men's meeting, and accepted, and a deputation proceeded to the Stone Exchange and informed the masters of the decision. The new rules of work were then signed. On the 9th inst., at the Bradford Builders' Exchange, a meeting was held to consider a circular from the Lancashire and Cheshire Building Trades' Employers' Federation, in which the stone merchants of Bradford and district and the Yorkshire Builders' Federation were asked to co-operate with the builders in Lancashire and Cheshire against the masons, who are now on strike in those counties. It appeared that masons are now on strike to prevent sawn or worked stone from being imported from Yorkshire into Lancashire and Cheshire. Sympathy was expressed with the request contained in the letter, and the Bradford secretary was instructed to write asking for a complete list of federated employers and stone merchants who had supplied stone to be worked in Lancashire.

BUILDING TRADE STRIKE, WEST STANLEY, DURHAM.—The masons and bricklayers in West Stanley have struck work for an advance of wages from 9d. to 10d. an hour.

STRIKE OF LABOURERS AT BLYTH, NORTHUMBERLAND.—The masons' labourers employed at Blyth have struck work to enforce an advance of wages from 6½d. to 7d. per hour, only one of the sixteen builders in the town having so far conceded the demand.

THE BRICKLAYERS' LABOURERS' STRIKE, SHREWSBURY.—At a meeting of the master builders of Shrewsbury, under the presidency of Mr. H. Farmer, recently, it was decided not to entertain the labourers' demands in any way. Inasmuch as the men were offered an advance of one farthing per hour before they turned out, and would not accept that concession, the offer has now been withdrawn.

STRIKE OF BERWICK PLASTERERS.—On the 13th inst., the plasterers of Berwick, after giving a week's notice, came out on strike for a rise of 1d. per hour in their wages. The men are at present paid 7d. and the masons 8d. The plasterers ask for the same rate of pay as the masons. The joiners have also asked for an advance of wages, to take effect in July.

THE BUILDING TRADE DISPUTE, NEWPORT.—A further complication in the building trades dispute at Newport has occurred, the members of the Society of Plasterers having stopped work. The ground of cessation is that the men object to imported non-society men being employed.

LEGAL.

ACTION BY A SCAFFOLDER AGAINST A CONTRACTOR FOR ALLEGED NEGLIGENCE.

THE case of Picars *v.* Lovatt came before Mr. Justice Bruce and a special jury in the Queen's Bench Division on Tuesday and Wednesday last week, it being an action brought by Frank Picars, a scaffolder, against Mr. Henry Lovatt, contractor, whose principal place of business is at Darlington-street, Wolverhampton, to recover damages for personal injuries which it was alleged the plaintiff had sustained through the negligence of the defendant. The defence was a denial that there had been any personal negligence on the part of the defendant, and that if there had been any negligence at all it had been that of a fellow servant.

Mr. Ruegg, Q.C., and Mr. John O'Connor appeared for the plaintiff, and Mr. Clavell Salter for the defendant.

The case for the plaintiff, as stated by his counsel and detailed in the evidence, was that the defendant had secured the contract for the erection of Her Majesty's Theatre, Haymarket, for Mr. Beerbohm Tree. The plaintiff was employed on the work as a scaffolder, and it was while following this occupation, on August 10, 1896, that the accident occurred which resulted in his injuries. He was some 42 ft. from the ground, splicing poles, when the scaffolding on which he was standing gave way, and he fell this distance. His right ankle and right knee were cut and bruised, and two ribs of his left side were broken, and he sustained other injuries. He was picked up and conveyed to the hospital, where he was detained as an in-patient for seven days, afterwards attending the institution as an out-patient for fourteen months, whilst he was still being medically attended to by his doctor. He alleged that he still suffered from the effects of the accident, and was unable to follow any employment. The reason the scaffolding gave way, he said, was because the defendant instead of using ropes with which to splice the poles used chains. These were lacquered, and it was then impossible to detect any defect in the links. One of these chains gave way and, on being picked up, it was found that a link had been broken. It was, it was said, most unusual for a contractor to use chains instead of ropes for scaffolding purposes, for whilst the latter were reliable, the former were dangerous. It appeared that the plaintiff had instituted an action in the County Court under the Employers' Liability Act, but was non-suited on the ground that the defendant had not been served with the necessary notice within six weeks of the accident, hence the present proceedings at common law.

The defence was that there was no evidence of personal negligence on the part of Mr. Lovatt, and nothing to show that the chain which gave way was not a new one at the time it was so used in the scaffolding. As a matter of fact, it was said the chain was quite new, and no chain was ever lacquered over except when it was first made. It was admitted that the defendant, in the course of his business, caused chains to be used in the construction of scaffolding instead of cords. Throughout the Midland district chains were used in all large building operations, and they had completely ousted the use of cords. They were adopted by contractors, not from methods of economy—because they were dearer than cords—but because they were safer for the workmen, enabling a scaffold to be erected which was perfectly rigid and safe in every respect.

Evidence was given on behalf of the defendant by several contractors, who stated that chains were much safer for the workmen than ropes.

The jury eventually returned a verdict for the defendant, but expressed a hope that Mr. Lovatt would see his way to award to the plaintiff some compensation.

Counsel for the defendant said he would communicate that wish to Mr. Lovatt, and

Judgment was entered in accordance with the verdict.

* See the *Builder*, June 22, 1889, for Mr. S. W. Kershaw's paper, read to the Surrey Archæological Society; and our "Notes" of May 11, 1889, and January 24, 1891.

ACTION BY BUILDERS AGAINST BUILDING OWNERS:

CASE IN COURT OF APPEAL.

THE case of the Horseley Company, Limited, *v.* Willans Robinson, Limited, came before the Court of Appeal, composed of Lords Justices A. L. Smith, Rigby, and Vaughan Williams, on the 13th inst., on the appeal of the defendants from an order of Mr. Justice Darling in Chambers, made on May 17, by which he varied an order of the Official Referee, Mr. Pollock, made on May 12, in an action brought on a building agreement by a firm of builders against the building owners.

Mr. A. J. Walter, who appeared in support of the appeal, said that the statement of claim set out that certain work was done under the agreement, and there was also an allegation that, owing to the negligence of the defendants, certain walls fell down and caused injury to certain plant of the plaintiffs. The statement of claim further set out that the plaintiffs were willing to accept the amount found by the architect in the final certificate, viz., 1,969*l.* The architect, however, had found that there was a sum of 1,800*l.* due to the defendants for penalties owing to the non-completion by the builder of the work in question by the specified date. He also certified that the walls did not fall down by the negligence of the building owners, but owing to the negligence of the builder; and in respect of this he found that 433*l.* 4s. 2d. was due to the building owners from the builders. By the defence the agreement was admitted, and the certificates of the architect were also set up. An application was subsequently made to the Official Referee by the defendants for leave to amend the defence by paying into Court a certain sum while denying liability, and that was allowed. The defendants paid into Court generally 295*l.* 7s. 7d., denying liability in the action. The defendants' counterclaim was the same as the defence, except that, in lieu of setting up the architect's certificate as a defence, they relied upon the grounds on which the architect had given his certificate, and the defendants claimed the same amount as the architect had allowed by way of counterclaim. That was in the event of the architect's certificate not being held to be binding. When the application was made to amend, the plaintiffs asked the Official Referee to order that the sum paid into Court by the defendants should be apportioned to certain items, but he refused to do that. Mr. Justice Darling, however, on the plaintiffs' appeal, varied the order of the Official Referee by directing the defendants to apportion the amount to be paid into Court to the particular item or items of the plaintiffs' claim in respect of which it was paid in. The learned counsel said there was a paragraph in the defence that if the plaintiffs accepted the sum paid into Court in full discharge of their claim, the defendants would waive their counterclaim. If the defendants were ordered to apportion the amount paid into Court to particular items in the claim, the plaintiffs would, notwithstanding the defendants' denial of liability, take the money out in satisfaction of particular items, and the action would then proceed as to the rest. He submitted that the order of Mr. Justice Darling was wrong.

Mr. English Harrison, Q.C., on the other side, said that the statement of claim set out two distinct causes of action, viz., the sum due under the architect's certificate, and the damage to the plaintiffs' plant, &c., by the fall of the walls, and according to the plaintiffs' case that had nothing to do with the architect's certificate. The plaintiffs alleged negligence on the part of the defendants in constructing the walls—with which the contract the plaintiffs were performing had nothing to do—and which tumbled down, causing damage to the plaintiffs' plant and machinery to the extent of 125*l.* odd The defendants, by their defence, denied every single thing, and further alleged that the plaintiffs were negligent in respect of those walls. It was impossible for the plaintiffs to take out the money paid into Court except they knew in respect of which items it was paid in.

Their Lordships ultimately reversed the order of Mr. Justice Darling and allowed the appeal with costs.

PUBLIC BODIES AND THE BUILDING LAWS.

MR. JUSTICE STIRLING, in the Chancery Division of the High Court of Justice on the 14th inst., delivered judgment in the case of the Grand Junction Waterworks Company *v.* The Hampton Urban District Council, which had been argued the week previously on a point of law raised by the defendants, and which stood over to enable further evidence to be called.

Mr. Bosanquet, Q.C., Mr. Macmorran, Q.C., and Mr. Cunningham Glen appeared for the plaintiffs; Mr. C. E. E. Jenkins, Q.C., and Mr. H. C. Munroe for the defendants.

The action was brought by the plaintiffs to obtain a declaration that they were entitled to build on any part of the land belonging to them in Upper Sunbury-lane. For the defence it was argued that the Court had no jurisdiction to make such a declaration, and that even if it had the case was one in which the Court, in the exercise of its discretion, ought not to give the relief sought.

His Lordship, in giving judgment, said the question was whether he ought to allow the plaintiffs' action to go on. The Legislature provided a cheap and short method of obtaining decisions on any points affecting building lines, and it would be a matter of regret if a more expensive mode of obtaining a decision were to be resorted to in the absence of special circumstances. His experience had taught him that vestries and local authorities were sometimes too ready to embark on costly litigation without any equivalent benefit accruing to the ratepayers. He should be sorry to allow any individual or any public body, when a cheap and speedy mode of settlement was at hand, to resort to a more expensive remedy. There were no special circumstances in the present case, and he therefore came to the conclusion that it was one in which the Court ought not to interfere to make the declaration asked for. As the disposal of this point of law practically put an end to the whole case, the action would be dismissed with costs.

MEETINGS.

SATURDAY, JUNE 18.

Liverpool Architectural Society.—Second Excursion: a visit will be made to Thornton Manor and Village. Boat from Landing Stage to New Ferry at 2 o'clock, and drive thence through Sunlight Village to Thornton Hough.

Northern Architectural Association.—Excursion Meeting: visit to the Theatre Royal and the Tyne Theatre.

British Institute of Certified Carpenters.—Visit to Chatham Dockyard, Rochester Castle, and Cathedral. 4 p.m.

MONDAY, JUNE 20.

Royal Institute of British Architects.—Presentation of the Royal Gold Medal, for the promotion of architecture, to Professor Aitchison, R.A., for his works as an architectural writer and for his executed works as an architect. The presentation will be made and an address delivered by Mr. Penrose, F.R.S., past President. 8 p.m.

THURSDAY, JUNE 23.

Society of Antiquaries.—8.30 p.m.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until July 25.

[1897.] 9,725.—REGULATION AND FASTENING OF WINDOW SASHES IN THEIR FRAMES: *J. C. Moore.*—The sliding sashes balance one another on cords or pulleys in the frames, and the cords laced through the pulleys are made fast by self-acting fasteners on the sash or frame; the sashes are made fast by the action of a bolt and eccentric working in the frame where they meet, and to turn them inside for cleaning they are both brought to the bottom, the lower part of the two inside beads is depressed, the sashes are hooked to the frame on one side and turned inside; the pulleys are made for the cords to be lifted off them, and the sashes are now supported by the hooks and cords.

12,347.—FOR MECHANICALLY DETERMINING PERCENTAGES AND OTHER NUMERICAL RESULTS: *R. Naish.*—The contrivance consists in the use of a "position finder" combined with a scale of figures similar to that marked on some slide rules; the former is a rectangular plate with a chamfered edge graduated, and marked by a fixed "polar point;" to the plate is connected a movable arm carrying a universal joint from which extends a second arm having at its end a pin or "vectorial point." Examples: (*a*) to find what percentage of 952 is 684: the position finder is applied to the scale so that the fixed polar point coincides with 952, and the chamfered edge coincides with the line on the scale, the movable vectorial point is brought to 684 on the scale, the instrument is then lifted from the scale and re-applied so that the polar point will coincide with a "power point," 100 or 1, according to the deflection of the vectorial point, and the edge will lie along the line on the scale, whereupon the vectorial point will indicate 71·8—the percentage required; (*b*) to multiply 175 by 462; apply the polar point to 175, adjust the vectorial point to a power point (either the first or last point of a single scale), re-apply the vectorial point at 462, and the polar point will indicate 8,085—the digits of the product 80,850; (*c*) to find the amount of an annuity of 3*l.* 6s. 8d. accumulated for twenty-seven years at 5 per cent.; take the mantissa (02119) of 105, multiply this by 27, producing 0·57213, regard this as a logarithm and ascertain (with the device) its natural number 3·735, substract 1 from the unit figure, leaving 2·735, apply the polar point at 2735, adjust the vectorial point to 5, re-apply it at 3333 (since 3*l.* 6s. 8d. = 3·333*l.*), and the polar point will indicate 1824—the digits of the required result 182*l.* 4s.

13,000.—COMPOSITION OR CEMENT FOR LINING AND JOINTING, MENDING, OR RENEWING GAS RETORTS, FURNACES, &c.: *A. W. Crowther.*—The admixture is composed of earths of a refractory nature, such as fire-clay, and gannister, or silica, to which is added about 25 per cent. of soda; the whole is ground and made into a paste, or into a powder; the tenacity of the compound may be increased by adding barilla or soda, or the like, and if used for washing out retorts it will be found that it leaves on the retort's interior walls a vitreous surface.

14,103.—MEASURING AND LAYING DOWN ANGLES: *A. M. A. Struben.*—The invention, relating more particularly to bevel protractors, lies in making the movable arm of such a width that it extends from the centre up to, or beyond, the protractor's outer edge, one of its edges being radial and the other parallel to such radial edge; the graduations on the protractor are numbered for readings from 0 to 360 deg., or infinity to be taken, and a vernier on the arm facilitates the reading of small angles; the 0 mark on the protractor need not coincide with the base line, as in ordinary protractors, and the 90 deg. mark is similarly out of coincidence with the vertical line from the centre; four sets of numbers, to correspond with the angles of a circle's quadrant, may be marked on the protractor; by means of a clamping device the movable arm can be locked in position, and the instrument will then answer the purpose of an adjustable set square

16,842.—SPIGOT AND SOCKET JOINTS FOR PIPES, SPECIALLY APPLICABLE TO EARTHENWARE PIPES: *G. G. Rayner.*—Jointing surfaces of asphalte are moulded in position on the socket (interior) and spigot (exterior), so that an annular space is left between the two collars; a collar on the nose and another on the shoulder of the spigot make an inner and an outer joint respectively, leaving between them an annular space (for filling), the circumferential bounding portions of which are formed by the indented surfaces of the spigot and tapering socket.

16,956.—FLOORING: *A. Loewi.*—The flooring is composed of small boards or planks joined at their edges by interposed feathers or strips of wood. A number of adjoining rows so connected together are laid upon the joists in such a manner that the ends of the planks of each two adjoining rows shall abut against the opposite sides of a metal list or fillet placed between them.

17,442.—HANDLES FOR FILES AND SIMILAR TOOLS: *H. Ringel.*—The ferrule has counter teeth, by which it is securely fixed upon the handle; the latter is bored with a conical hole for receiving a spiral spring, which holds the tool's end or tang like a screw thread in many points when driven in firmly, and at the same time prevents the splitting of the handle. The hole in the handle may be circular, and may be filled out with a similar cylindrical spring fitted with a wooden bush having a small boring for the tool's pointed end.

20,243.—DRAWING COMPASSES: *F. H. Shaw.*—The adjustable joint consists of a forked end of one leg fitting upon a tongue or plate end of the other leg, with a screw pin passing through plain co-incident holes in the joint ends of both legs; one end of the pin has a large nicked head, whose plain face abuts against the cheek of a branch of the forked end; whilst the other end is wormed and takes a nut, which bears against the face of the forked joint end.

26,804.—SOLDERING APPLIANCE: *J. C. Barber & Z. Barber.*—To keep the bit heated whilst it is in use is provided a tank for gasoline or other liquid from which a gas may be generated by mixture with air; on the tank is a pump having a valve-controlled communication with the tank's interior and also serving as a handle for the instrument: the appliance comprises also means for forcing air into the tank, a burner, a bit mounted in the burner, with a container for solder and a raceway leading therefrom to the bit.

29,264.—MOULDING, PRESSING, AND DELIVERING TILES, QUARRIES, BRICKS, &c.: *R. Stanley.*—Within the die are two oppositely situated plungers for moulding and pressing, and a third plunger for raising the pressed quarry, &c., from out of the die. The machine is constructed after two types: in the one type the plungers are so actuated and the supply of clay or terra-cotta so regulated by cams or eccentrics upon a cylinder, that all the operations of moulding, pressing, and delivering an unburnt tile, &c., from one die are accomplished in one revolution of the cam cylinder, the double pressure being produced by two successive cams; in the other type there are two cam cylinders, whereof one, mounted upon the driving shaft and working the plungers, revolves twice for each completed series of operations, whilst the other is geared to revolve once for two revolutions of the shaft.

[1898] 6,516.—FIXING RAIN-WATER AND OTHER PIPES: *C. Thomerson.*—For leaving a space between the pipes and the wall, solid or hollow blocks are placed between the wall and the pipe ears; the blocks are pierced for the securing nails, and have pins that enter the wall prior to the fixing of the pipes.

7,678.—WATERPROOF MATERIAL FOR ROOFING AND INSULATING PURPOSES: *L. Hatschek.*—To impregnate felt with bitumen, pure Trinidad asphalt (not asphalt-tar) is used in the form of powder mixed, in a mill or vat, with the fibrous material, the mass is then formed into sheets, and dried upon heated calendering machines, during that process the liquefied bitumen spreads itself uniformly through the fibrous material.

NEW APPLICATIONS.

May 31—June 4.

12,201, S. G. Brown, Quadruplex and Multiplex Telegraphy. 12,205, M. Watson, Cramps for Use in Soldering Lead Pipe-joints. 12,208, Royce & Claremont, Brakes and Clutches for Cranes, Hoists, and other Lifting Machinery. 12,211, J. R. Wood, Varnish. 12,219, H. Smith, Hand-tools. 12,232, A. B. Brown, Telemotor Apparatus. 12,237, Milner & Vyle, an ABC Telegraphic Transmitter. 12,247, J. S. Coe, Thermostatic Gas Regulators. 12,253, J. T. Gent, Tap or Cock for Controlling Gas Supply Mains and Branches. 12,255, E. G. Sjostrand, Reproducing Drawings, &c. 12,258, R. Southby, Window Fastener. 12,270, Tabrar & Evans, Lantern Cocks and the like for Gas, Water, &c. 12,289, L. Gunn, Cooling or Equalising the Temperature in Vessels or Chambers. 12,292, H. W. Swain, a Sliding-socket Drain Pipe. 12,293, T. Tebbutt, Syphon Cistern and Water Waste-preventer for Flushing Water-closets, &c. 12,304, W. R. Warwick, Manufacture of Glazed Mosaic Plain, Sgraffitoed, or figured. 12,309, F. C. Keene, Air Inlet Valve for Sewers, House-drains, &c. 12,313, F. King, Secondary Batteries or Electric accumulators. 12,316, C. Parkes, Appliances for Grates and the like. 12,321-3, P. A. Emanuel, Electric Batteries. 12,325-6, G. Marconi, Wireless Telegraphy. 12,336, L. Lindemann, Glass Panels for Decorative and Similar Purposes. 12,338, L. Wolff, Grain Elevator. 12,342, J. Hubbard, Winding-Machine. 12,344, J. Sossick, Moulded Decorative Tiles, Slabs, Panels, and Blocks. 12,348. Saxby's White Lead Syndicate and H. G. Percival, White Lead. 12,353, Hansen & Frimand, Safety Locks for Doors. 12,360, Halket & Kennedy, Safety Appliance for Lifts. 12,364, C. Hayes, Combined Sketching Box and Easel. 12,368, J. Cook, Opening Sash Windows Inwardly. 12,378, S. H. Adams, Filter Beds and Works connected therewith. 12,382, S. H. Hamer, Lathe Chucks. 12,384, J. T. Cope, Heating by Hot Water. 12,385, G. Tomkinson, Window Sash Fasteners. 12,408, H. Blackburn, Ventilating, Disinfecting or Distributing Perfumes &c., in Enclosed Places, Buildings, Restaurants, &c. 12,423, Vandam & Marsh, Electric Switches. 12,434, E. Burden, Gas or Oil Stoves. 12,438, M. Kallmann, Leakage or Current-Escape Indicator (Electrical). 12,439, M. M. J. O. O'Conor, Dredging Apparatus. 12,448, Barraclough & Co. and others, Lead or other Piping and Joints therefor. 12,464, A. W. Cameron, Smoke-Consuming Apparatus. 12,470, B. Krasselt, Hinges. 12,489, Wilders, Sludge or Sewage Tanks. 12,495, T. T. Somerville, Prepayment Mechanism for Gas and other Fluid Meters. 12,520, F. Ferracciu, and 12,552, J. Duckett & Son, and another, Water-Closets. 12,522, A. Smith, Drill Shaping and Sharpening Machines. 12,523, R. W. Oughton, Brackets. 12,543, T. P. Richards, Drying Apparatus. 12,546, J. B. Pearson, Combined Hay Rack and Shutter for Cattle Sheds and similar Structures. 12,548, J. Weir, Brickwork of

Water-tube Steam Boilers. 12,550, T. P. Purcell, Portable Fire Escapes and Aërial Extension Ladders. 12,559, A. J. Wilton, for Arresting and Collecting Sparks, &c., issuing from Chimneys. 12,561, L. E. S. Wood, Map Holder. 12,562, Fawcett, Preston, & Co., and C. A. Matthey, Electric Motors and the Transmission of Power therefrom. 12,567, R. M. Mark, Protractors. 12,569, J. & F. Ward, Straining Wire in Fences, &c. 12,575, C. H. Forrester and others, Fire Extinguishers. 12,580, F. & S. Chiesman, Conduits or Conductors for Electric Cables. 12,588, C. P. Mayer, Automatic Gas-vending Apparatus. 12,592, J. Hont, Obtaining Decorative Effects for Theatres and other Places. 12,597, F. T. Giles, Cast Nails, Screws, Bolts, &c., having Spiral or Twisted Shanks, Stems, or Prongs. 12,598, Hulburd & Hall, Flanged Joints for Pipes and Tubes. 12,601-2, H. A. Hobson, a Deodorising Disinfecting Agent, and a Purifying Agent for Water Sewage and other Foul Liquids. 12,605, Durrant & Dunn, Draining Machines.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 25.—By NEWLAND, DAVIS, & HUNT (at Newport).

Carleon, Monmouth.—"Pill Bach Farm," 66 a. 2 r. 28 p., f. £3,700
Undy, Mon.—Two freehold houses and 5 a. 0 r. 20 p. 645
Various enclosures of land, 26 a. 2 r. 1 p., f. 1,805
Redwick, Mon.—Various enclosures of land, 33 a. 3 r. 21 p., f. 1 575
Wolvesnewton, Mon.—"Coarn Farm," 74 a., f. .. 890
Caldicot, Mon.—"Ivy Lodge," f. 630
Two freehold cottages 250

May 26.—By C. RAWLEY CROSS & Co. (at Ealing).

Ealing.—10 and 11, Alacross-rd., u.t. 96 yrs., g.r. 10*l.*, r. 75*l.* 8s. 520

By WALTER PARISH (at Erith).

Belvedere, Kent.—Abbey-rd., a freehold building estate, area 6 a. 3 r. 7 p. 2,250

By E. P. NEWMAN (at Uxbridge).

Ruislip, Middx.—A freehold house, orchard, and land, 1 a. 3 r. 33 p. 440

By HAMPTON & SONS (at Portsmouth).

Fareham, Hants.—"Clapgate Farm," 28 a. 0 r. 13 p., f. 1,110
"Furze Hall Farm," 30 a. 3 r. 29 p., f. 1,850
An enclosure of land, 6 a. 0 r. 21 p., f. 545
Three enclosures of land, 22 a. 1 r. 6 p., f. and c. 790

By WATERS & RAWLENCE (at Marnhull).

Marnhull, Dorset.—"Cross Tree" and "Pope's" Farms, 240 a. 2 r. 19 p., f. 6,750
Stalbridge, Dorset.—"Grove Farm," 99 a. 3 r. 32 p., f. 3,300
Margaret Marsh, Dorset.—"Church Farm," 132 a. 2 r. 25 p., f. 2,850
A plot of pasture, 3 a. 3 r. 33 p., f. 150

By BAXTER, PAYNE, & LEPPER (at Bromley).

Bromley, Kent.—Shawfield Pk., nine plots of building land, f. 1,435

May 27.—By COOK & BIRMINGHAM (at Exeter).

Cheriton Bishop, Devon.—"Haylake Farm," 61 a., f. 1,100

By RAFFETY & SON (at High Wycombe).

High Wycombe, Bucks.—63 and 64, Desborough-rd., f. 215
6 to 9 Spread Eagle Yard, f. 294
West Wycombe, Bucks.—Lane End, six freehold cottages 315

May 28.—By Messrs. SPELMAN (at Norwich).

Hellesdon, Norfolk.—Nine plots of land, 64 a. 1 r. 15 p., f. 2,845
Four freehold cottages and 3 a. 1 r. 7 p. 575
Two freehold houses and 10 a. 2 r. 14 p. 700
Drayton, Norfolk.—Freehold plantations and woodlands, 114 a. 0 r. 11 p. 1,800
Ludham, Norfolk.—Six houses, wheelwright's shop, &c., c., e.r. 33*l.* 6s. 251

By MOORE & SONS (at Gloucester).

Quedgeley, &c., Glos.—"Upper Green Farm," 82 a. 2 r. 29 p., f. 5,100

By NATHANIEL TAYLOR (at Worcester).

Wichenford, Worcester.—"Colkett's Farm," 90 a. 3 r. 20 p., f. 1,400

May 31.—By A. C. HIGGS (at Weymouth).

Weymouth, Dorset.—"The Radipole Spa Estate," 9 a. 0 r. 7 p., f. 2,500
2, Lennox-st., u.t. 79 yrs, g.r. 3*l.*, r. 16*l.* 280

By CUMBERLAND & HOPKINS (at Leighton Buzzard).

Leighton Buzzard, Beds.—17, North-st., f., r. 31*l.* 10s. 450
1, Mill-rd. and two cottages, f., r. 26*l.* 340
"The White House," and 1 a. 0 r 37 p., f. 2,250
Hockliffe-st., &c., two plots of land, 3 a. 1 r. 33 p., f. 2,260
Back-lane, a freehold house, r. 13*l.* 200
Plantation-rd., four cottages and 0 a. 2 r. 36 p., f. 220
Heath-rd., "The Travellers' Rest" b.-h., and 0 a. 1 r. 36 p., f. 780
Heath-rd., 12 cottages and 1 a. 2 r. 25 p., f. 570
Heath-rd., &c., four plots of land, f. 238
Heath-rd., &c., six enclosures of land, 11 a. 1 r. 11 p., f. 960
Heath-rd., a freehold house and 6 a. 0 r. 15 p. .. 770
Hockliffe-rd., garden and pasture land, 14 a. 0 r. 35 p., f. 550
Union-st., "The Leys Pasture," 2 a. 0 r. 27 p., f. 165
Heath and Reach, a freehold house, and 0 a. 0 r. 25 p. 205
Ivinghoe, Bucks.—Two freehold houses 170

June 1.—By H. J. BROMLEY.

Norwood.—58, Auckland-rd., u.t. 83 yrs., g.r. 8*l.* 8s., r. 45*l.* 470

By C. H. BROWN.

Pimlico.—33, Bessborough-place, u.t. 28 yrs., g.r. 6*l.*, r. 40*l.* 350
75, Grosvenor-rd., u t. 35½ yrs., g.r. 9*l.*, e.r. 65*l.* 510

By DANN & LUCAS.

Wilmington, Kent.—"Perry Field," 10 a. 0 r. 25 p., f. 900

By P. & G. GEEN.

Brixton.—86 and 88, Railton-rd., u.t. 71 yrs., g.r. 10*l.*, r. 65*l.* 630
Southwark.—68, St. George's-rd., u.t. 49 yrs., g.r. 25*l.*, r. 65*l.* £500

By NOKES & NOKES.

Somers Town.—23, Hampden-st., and 159, Ossulton-st., u.t. 42 yrs., g.r. 24*l.*, r. 88*l.* 8s. 600
Bethnal Green.—246, Old Ford-rd., u.t. 55¼ yrs., g.r. 7*l.*, r. 42*l.* 375
Plaistow.—162, 164, and 166, Grange-rd., f. 650

By Messrs. WOODS.

Kensington.—Earl's Court-gardens, f.g.r. 50*l.*, reversion in 53 yrs. 2,260
Earl's Court-gardens, two peppercorn ground rents, reversion in 53 yrs. 135
1 and 2, Earl's Court-gardens, u.t. 52¾ yrs., g.r. 10*l.*, r. 105*l.* 1,515
Chelsea.—99, Sydney-st., u.t. 11¼ yrs., g.r. 4*l.*, r. 50*l.* 265

By THOMAS WOODS.

Hounslow, Middx.—1 to 4, Trinity-ter., f., r. 84*l.* 1 to 12, Pownall-gardens, f., r. 493*l.* 1,030
Pownall-rd., three plots of building land, f. 5,790

By WINCH & SONS (at Cranbrook).

Cranbrook, Kent.—"Willesley Pound Land" and cottages, 17 a. 1 r. 24 p., f. 305
Benenden, Kent.—"Bowles Farm," 41 a. 3 r. 31 p., f. 1,220
A freehold cottage and 10 a. 0 r. 34 p. 700
"Frog's Hole Farm," 18 a. 1 r. 7 p., f. 120

By A. DOWELL (at Edinburgh).

Colmonell, Ayrshire.—The Estate of Arnsheen, 7,793 a. 500
The Estate of Drumlamford, 6,038 a. 33,500
Farm of High Altycane, 161 a. 33,500

By SWAN WOODCOCK (at Stratford).

Leytonstone.—1 to 11 (odd), Rookwood-ter., f. 2,425
Leyton.—139, High-rd., u.t. 81 yrs., g.r. 5*l.* 15s., e.r. 40*l.* 1,800
Forest Gate.—33, Disraeli-rd., f. 315
.. By C. RAWLEY CROSS & Co. (at Shepherd's Bush).
Shepherd's Bush.—9 and 11, Bloemfontein-rd., u.t. 82 yrs., g.r. 11*l.*, r. 70*l.* 415

By G. B. HILLIARD & SON (at Romford).

Dagenham, Essex.—Enclosures of land, 4 a. 3 r. 0 p., f. 750
Two plots of building land, f. 500

By F. PITTIS & SON (at Niton).

Niton, Isle of Wight.—"Puckwell" and "Lock's Estate," 128 a. 1 r. 18 p., f. 1,820
Two enclosures of land, 2 a. 3 r. 2 p., f. 330
"Lower Common Field," 7 a. 2 r. 2 p., f. 4,150

By SIMMONS & SONS (at Maidenhead).

Waltham St. Lawrence, Berks.—Enclosures of land, 8 a. 0 r. 1 p. 210
White Waltham, Berks.—"Buck Farm Copse," 6 a. 2 r. 22 p., f. 400
Various enclosures, 52 a. 1 r. 15 p., f. 270
Binfield, Berks.—Two enclosures of land, 13 a. 1 r. 6 p., f. 180
"Yates Farm," 16 a. 0 r. 39 p., f. 1,480
An enclosure of woodland, 4 a. 0 r. 28 p., f. 350

By G. B. HILLIARD & SON (at Romford).

Dagenham, Essex.—Church Elm-rd., an enclosure of market garden land, 4 a. 3 r., f. 650
Vicarage-rd., &c., two plots of building land, f.. 500

June 2.—By IZARD, FRENCH, & IZARD.

Brixton.—38, Gresham-rd., u.t. 66 yrs., g.r. 10*l.*, e.r. 55*l.* 330

By DUNN, SOMAN, & COVERDALE.

Highbury.—1, Highbury-ter., area 12,250 ft., f. .. 460
East Grinstead, Sussex.—Lingfield-rd., "Lonsdale House," f., r. 40*l.* 3,000

By JONES, SON, & DAY.

Limehouse.—40 to 48 (even), Copenhagen-pl.; also "Copenhagen Wharf," u.t. 32 yrs., g.r. 60*l.*, r. 215*l.* 4s. 500
193, 193a, and 195, Salmon's-lane; also 4, 6, and 8, Copenhagen-pl., u.t. 37 yrs., g.r. 35*l.*, r. 234*l.* 12s. 1,100
Mile End.—121, Sidney-st., with range of stabling, f., e.r. 75*l.* 1,810
Upton Pk.—Upton-lane, two plots of building land, f. 1,230

By LEVENS, SON, & HOARE.

Beckenham, Kent.—Brackley-rd., "Brackley House," u.t. 65½ yrs., g.r. 34*l.* 10s. 560
Forest Gate.—6, Osborne-rd, u.t. 78 yrs., g.r. 6*l.* 15s., e.r. 36*l.* 675
26, Claremont-rd., u.t. 78 yrs., g.r. 8*l.* 8s., e.r. 40*l.* 345

By C. C. & T. MOORE.

Aldgate.—4, 6, 10, 12, 15, and 30, Newnham-st., and 2, Tenter-st. West, u.t. 31 yrs., g.r. 22*l.* 15s. 410
Victoria Pk.—63, Approach-rd., u.t. 55½ yrs., g.r. 6*l.*, e.r. 42*l.* 2,520
Buckhurst Hill.—Epping New-rd., f., r. 50*l.* 360
Stag-lane, "Stag Lodge," u.t. 972 yrs., g.r. 4*l.* 670
Stag-lane, "Elm Cottage," and plot of land in rear, f. 450
1 and 2, Melrose Villas, f., r. 60*l.* 315

By NEWBON, EDWARDS, & SHEPHARD.

Bermondsey.—72 and 74, Southwark Park-rd., u.t. 31 yrs., g r. 10*l.* 16s., r. 74*l.* 750
13 and 15, Ambrose-st., u.t. 40 yrs., g.r. 7*l.* 670
Finsbury.—8, South-st., a beneficial lease for 11½ yrs., r. 125*l.*, with goodwill 400
Crouch End.—184 and 186, Park-rd., u.t. 82 yrs., g.r. 12*l.* 12s., r. 62*l.* 410

By STIMSON & SON.

Clapham.—12, Leathwaite-rd., u.t. 83 yrs., g.r. 8*l.* e.r. 40*l.* 575
Brixton.—233, 235, and 237, Brixton-rd., u.t. 10 yrs., g.r. 29*l.*, r. 158*l.* 365
384, Brixton-rd., u.t. 27½ yrs., g.r. 7*l.* 15s., e.r. 65*l.* 730
20, Barrington-rd., u.t. 24¼ yrs., g.r. 7*l.*, r. 60*l.* 450
9 and 11, Gresham-rd., u.t. 54 yrs., g.r. 13*l.*, e.r. 95*l.* 490
Old Kent-rd.—66 and 74, Avondale-sq., u.t. 57½ yrs., g.r. 13*l.*, r. 70*l.* 1,020

June 3.—By E. E. CROUCHER & Co.

Wood Green.—Melrose-av., f.g.r. 38*l.* 17s., reversion in 99 yrs. 690

By Messrs. CRONK.

Sundridge, Kent.—Ide Hill, "Scollops Farm," 89 a. 0 r. 32 p., f. £1,860

By DOWSETT, KNIGHT, & Co.

Fulham.—80 and 86, Harwood-rd., u.t. 89 yrs., g.r. 14*l.* 11s., r. 80*l.* 800
24, 25, 27, and 28, Musgrave-cres., u.t. 89 yrs., g.r. 22*l.* 6s., r. 144*l.* 1,660
Clerkenwell.—15 and 19, Chadwell-st., u.t. 13 yrs., g.r. 7*l.* 10s., r. 70*l.* 270

By PROTHEROE & MORRIS.

New Malden, Surrey.—Acacia-grove, "Burlington Villa," f., e.r. 85*l.* 1,400
Stratford.—Buxton-rd., f.g.r. 4*l.*, reversion in 69 yrs. 110
53, 63, 70, and 72, Buxton-rd., f., r. 90*l.* 1,470
125, 127, 129, and 131, Leyton-rd., f., r. 99*l.* 1s... 1,145
Forest Gate.—55, Claremont-rd., u.t. 78 yrs., g.r. 8*l.* 16s., e.r. 48*l.* 630

By REYNOLDS & EASON.

Twickenham.—18 and 19, South-rd., u.t. 50 yrs., g.r. 4*l.* 420

By NEWBON, EDWARDS, & SHEPHARD.

Tottenham.—563 to 577 and 595 to 601 (odd), Seven Sisters-rd., u.t. 78 yrs., g.r. 96*l.*, r. 363*l.* 16s... 3,110
603 and 605, Seven Sisters-rd., u.t. 78 yrs., g.r. nil, e.r. 70*l.* 510
607 to 611 and 625 to 631, Seven Sisters-rd., u.t. 80 yrs., g.r. 56*l.*, r. 194*l.* 4s. 1,670
2 to 38 (even), Elizabeth-rd., u.t. 80 yrs., g.r. 95*l.* 2,890
3 to 11 (odd), Elizabeth-rd., u.t. 78 yrs., g.r. 25*l.* 820
2 to 11, Station-rd., u.t. 80 yrs., g.r. 40*l.* 1,470
1 to 10, St. George's-rd., u.t. 78 yrs., g.r. 50*l.* .. 1,670
11 to 22, St. George's-rd., u.t. 83 yrs., g.r. 66*l.*.. 1,940
23 and 24, St. George's-rd., u.t. 80 yrs., g.r. 9*l.*.. 265
2, 4, and 6, Culvert-rd., u.t. 80 yrs., g.r. 13*l.* 10s. 380
1 to 19 and 23 to 41 (odd), Culvert-rd., u.t. 78 yrs., g.r. 105*l.* 2,410
44 to 82 (even), Russell-rd., u.t. 80 yrs., g.r. 80*l.* 3,060
2 to 20, Garfield-ter.. u.t. 80 yrs., g.r. 66*l.* 10s. .. 2,120
13 and 14, Station-rd., u.t. 80 yrs., g.r. 8*l.* 220
Culvert-rd., a plot of building land, f. 1,000
Elizabeth-rd., two plots of building land, f. 960
Station-rd., a block of building land, f. 1,300
Notting Hill.—21, Kensington Pk.-rd., u.t. 64 yrs., g.r. 15*l.*, r. 40*l.* 310
1 and 11, Codrington-mews, f., r. 54*l.* 785

By W. BROWN & Co. (at Gt. Missenden).

Little Missenden, Bucks.—Enclosures of meadow land, 9 a. 3 r. 1 p., f. and c. 900

By BIDWELL & SONS (at Ely).

Littleport, Cambs.—Enclosures of fen land, with a cottage, area 55 a. 0 r. 30 p., f. and c. (in lots) 1,275

By ROOTES & WINTLE (at Ross).

Sollershope, Hereford.—"Rugdon Farm," 12 a. 2 r. 23 p., f. 590

By S. ALDRED & SON (at Yarmouth).

Yarmouth, Norfolk.—"The Dene House Estate," area about ¾ acre, f. 4,000

By FRANKLIN & SON (at Gt. Bardfield).

Great Bardfield, Essex.—"The Place Farm," 152 a., f. 2,500
Enclosures of land, with buildings thereon, 12 a. 1 r. 23 p., f. and c. 710
Various enclosures, 9 a. 3 r. 39 p., f. 495
Great Bardfield Board Schools, f. 420
Freehold Buildings and Yard (formerly the Gas Works) 160
Various Houses, Cottages, and Tenements, f. .. 2,187
"Sand Pit Field," 3 a. 2 r. 32 p., f. and c. 130
"South Lodge" and 4 a. 2 r. 7 p., f. 925
Four cottage tenements, f. 352

By WYATT & SON (at Selsey).

Selsey, Sussex.—West-st., a plot of land, f. 180
West-st., four freehold cottages 590

By W. H. SHINER & WINTER (at Bristol).

Wrington, Somerset.—A freehold house and 18 a. 0 r. 31 p. 900
Enclosures of land, 25 a. 0 r. 38 p., f. 625
"Cornwell Farm," 93 a. 1 r. 18 p., f. 2,700
Blagdon, Somerset.—Four enclosures and 19 a 1 r. 9 p., f. 800

June 3.—By DOUGLAS YOUNG & Co. (at Worthing).

Worthing, Sussex.—The Grand Avenue, 21 plots of building land, f. 3,905
Valentia-rd., 20 plots of building land, f. 1,108
Down View-rd., "Natolia," "Homeleigh," and "Oedenburg," f., e.r. 195*l.* 2,400

June 4.—By HOLLIS & WEBB (at Ilkley).

Ben Rhydding, Yorks.—"Ploverfield," and 14 a. 0 r. 3 p., f. 5,800

By WOODS & Co. (at Northampton).

Harpole, Northants.—A freehold farm, area 96 a. 2 r. 13 p. 2,250
"Cory's Enclosures," 21 a., f. 1,000

June 6.—By W. A. BLAKEMORE.

Hornsey Rise.—Hazelville-rd., f.g.r. 32*l.*, reversion in 31 yrs. 610

By W. ROLFE.

Oxford-st.—No. 362, City Leasehold, g.r. 2*l.*, r. 250*l.* 6,400
"The Clarendon" p.-h., City Leasehold, g.r. 4*l.*, r. 200*l.* 7,900

By C. & F. RUTLEY.

Caterham, Surrey.—War Coppice-rd., a freehold building site, area 3 a. 2 r. 16 p. 280

By Messrs. FOSTER (on the premises).

Hyde Pk.—110, Gloucester-ter., u.t. 41¾ yrs., g.r. 30*l.* 1,125

By HEPPER & SONS (at Bradford).

Baildon, Yorks.—"The Baildon Bridge Mills Estate," area 24,767 yds., f., including motive power machinery, &c. 10,000

By C. F. MOORE (at Cirencester).

Duntisborn Abbotts, Glos.—A freehold farm, 41 a. 1 r. 5 p. 570
A freehold cottage and 2 a. 3 r. 0 p. 115
Hankerton, Wilts.—"Cloatley End Farm," 82 a. 3 r. 8 p., f. 1,700

June 7.—By HAWES & Co.

Merton.—1 and 2, Ivy Cottages; 6 to 14, Merton Rush, c. 1,110

By DEBENHAM, TEWSON, & Co.

Aston Clinton, Bucks.—"The Mount"; also a cottage residence, f. 1,325

By ELLIS & SON.

City of London.—21, Water-lane, area 530 ft., f., r. 120*l.* 2,830
47, Eastcheap, u.t. 64 yrs., g r. 80*l.*, r. 320*l.* 2,000

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
Additions to Schools, Thornhill	Rotherham Sch. Bd.	15*l.*; 10*l.*	June 30
Children's Home, &c. near Lowestoft	Mutford & Lothingland Union	Not stated	July 7
Office Extension, and New Register Office, Beverley	East Riding C.C.	30*l.*; 20*l.*; 10*l.*	July 16
*Sketch Models for Eight Stone Figures	Glasgow Corp.		No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Sand, Lime, Cement, Drain Pipes, stone and Wood Paving Blocks	St. Martin in the Fields Vestry	G. Green, Town Hall, Charing Cross-rd. W.C.	June 20
Shops, Victoria Buildings	Manchester Corp.	City Surv. Town Hall	June 21
Sewer Extension, Jordanstown	Belfast Union	J.W.Robb, TheWorkhouse, Belfast	do.
Sheds, Boundary Wall, &c.	Croydon Corp.	A. Broad, Archt.22,George street, Croydon	do.
Overhead Gangways	Wallasey U.D.C.	F. Ash, Egremont Ferry, Cheshire	do.
Church, Strata Florida, Cardiganshire		Telfer Smith, Archt. Builth Wells	do.
Shelter, &c. Recreation Ground	RainhamParish.Council	J. H. Harrop, Tufton-road Rainham, Sittingbourne	do.
*Kerbing, Channelling, &c.	Lewisham B. of W.	Surveyor, B. of W. Office, Catford, S.E.	do
Granite and Flint Road Metal	Aylesbury U.D.C.	J. H. Bradford, Surv. 2, Bickford's Hill, Aylesbury	June 22
Parochial Hall, St. Stephen's, Norwich	Vicar and Churchwardens	J. B. Pearce, Archt. 15, Upper King-st. Norwich	do.
Building Work, Creigiau, Pontypridd		A. O. Evans, Archt. Pontypridd	do.
Sewers, &c. Wardie-crescent	Edinburgh Corp.	Burgh Engr. 1, Parliament-square	do.
Cable Tramway Engines & Machinery	do.	W. N. Colam, C.E. 1, Parliament-square	do.
Rope Drives and Tension Machinery, Shrubbill and Tollcross	do.	do.	do.
*New Kitchen and Alterations to Workhouse	Newhaven Union	Clayton & Black, 152, North-st. Brighton	June 23
Eight Houses, North Side, Bridlington	W. Battle	J. Earnshaw, Archt. Bridlington Quay	do.
Drainage Works, Fairfield-road, Bridlington	do.	do.	do.
Road Materials	East Grinstead U.D.C.	R.Wilds, Surv. London-rd. East Grinstead	do.
Enlargement of Inland Revenue Office, Edinburgh	H.M. Office of Works	Sec. H.M. Office of Works, Westminster, S.W.	do.
Business Premises, High-street, New Brompton	C. Fynn	E. J. Hammond, Archt. Chatham	do.
Granite and Slag	Stafford R.D.C.	Surveyor, Council's Offices	do.
Broken Granite	Loughborough (Leics.) Corp.	Boro. Surv. Town Hall	do.
Additions to Workhouse	Birmingham Corp.	W. Bowen, Parish Offices, Edmund-st. Birmingham	do.
Additions, &c. to Workhouse	Newhaven Union	Clayton & Black, Archt. 152, North-st. Brighton	do.
*Sewer, Manholes and Ventilators	Hampstead Vestry	Surveyor, Vestry Hall	do.
*Iron Fencing	Wood Green U.D.C.	Surv. Town Hall, Wood Green	June 24
Sewers, Tring-road, &c.	Aylesbury U.D.C.	J. H. Bradford, Surv. 2, Bickford's Hill	do.
Dining Hall and House	Merthyr Tydfil Union	T. Roderick, Archt.Clifton-street, Aberdare	do.
Granite Setts (2,000 tons)	Brierfield (Lancs.) U.D.C.	J. T. Landless, C.E. Nelson, Lancs.	June 25
Two Pairs Semi-detached Houses, New Malden		R. A Hinds, Archt. 38A, Hill-rd. Wimbledon	do.
Road, Workington	Ripon R.D.C.	J. W. Highmoor, 19, Coltsgate Hill, Ripon	do.
*Cottage Hospital	Hanwell Jubilee Com.	District Council Offices, Hanwell	do.
*Repairing Two Warehouses	City of London Electric Lighting Co.	C. Thompson, 203, Grahamroad, Hackney, N.E.	June 27
*Seven Cottages	Chepstow Oddfellows Society	J. P. Consterdine, 30, High-st Chepstow	do.
Chapel, Llanddeiniol, Carnarvon		J. H. Williams, Archt Quebec-rd. Llanbadarn	do.
Ten Houses, Cramlington, co. Durham		J. G. Crone, Archt. 50, Grainger-st. Newcastle-on-Tyne	do.
*Chapel and Additional Wards at Workhouse	Bucklow Union	R. J. McBeath, Bloxam House, Sale	do.
*Hospital	Leicester Corp.	Blackwell & Thomson, Halford Chambers, Halford-street, Leicester	do.
*Painting and Repairs to Brickwork and Painting	Chelsea Guardians	Lansdell & Harrison, 38, Bow-lane, Cheapside	June 28
*Underground Convenience and Urinal	Southwark Vestry	O E. Winter, Vestry Hall, Borough-road, S.E.	do.
Additions to Grain Warehouse, Chorley	Lancs. & Yorks Ry.Co.	C. W. Hayley, Co.'s Offices, Hunt's Bank, Manchester	do.
Six Houses, Bala, North Wales		R. L. Jones, Archt. Mount place, Bala	do.
Gasholder Tank, &c. Beverley	Asylum Committee	C. W. Hobson, Newbegin, Beverley	do.
Technical Schools, Harrogate		W. J. Morley, Archt. 269, Swan-arcade, Bradford	do.
Shop, Harness Room, &c. Guildhall Yard	Winchester Corp.	City Surveyor, Guildhall, Winchester	do.
Work Yard, Shed, &c. nr. Birkenhead	Bebington Burial Bd.	J. C Ogle, Archt. 34A, Hamilton-square, Birkenhead	do.
Electric Light Station, Pine Grove	Bootle Corp.	J. A. Crowther, Boro. Engr. Town Hall	do.
*Sewerage Works	Berkhampstead U. & R.D.C.'s	J. Lemon, 9, Victoria-st. S.W.	June 29
*Wagon Repairing Shops, &c. at Heaton Junction	N. E. Rly. Co.	W. Ball, Central Station, Newcastle-on-Tyne	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Guernsey Broken Granite	West Suffolk C.C.	F. Whitmore, 17, Duke-street, Chelmsford	June 29
*Making-up and Paving Street	Fulham Vestry	C. Botterill, Town Hall, Walham Green, S.W.	do.
Sewerage Works, Frodsham	Runcorn R.D.C.	W. Digale, Surv. Holly Bank, Frodsham	June 30
Reservoir, Merthyr Dovan, Glam.	Barry U.D.C.	E. W. Waite, C.E. Gas Offices, Barry	do.
*Sewer, Engine House, Forming Roads &c.	Alton U D.C.	R. B. Grantham & Son, 23, Northumberland-av.W.C.	July 1
Isolation Hospital Block	Chester-le-Street R.D.C.	W. T. Jones, Archt. 7A, North Bailey, Durham	July 2
*Sewers, Tanks, Pumping Station, Boiler House, and Plant	Eton U.D.C.	Bailey, Denton, Son, & Lawford, Palace Chmbrs. Westminster	do.
*Superstructure of Asylum	L.C.C. Asylums' Com.	G. T. Hine, 35, Parliament street, S.W.	July 4
*Making-up, &c. Roads	Hendon U.D.C.	S. S. Grimley, Public Offices, Hendon, N.W.	do.
*Offices adjoining Workhouse	Kingston Union	W. H. Hope, Union Offices, Portsmouth-road, Kingston-on-Thames	do.
Reservoir, Newbigginghill, Roslin Asylum	Midlothian Lunacy Bd.	Leslie & Reid, Engr. 72A, George-street, Edinburgh	do.
Outfall Sewer (No. 1) Aber Valley	Caerphilly U.D.C.	A. O. Harpur, Engr. Council Offices	do.
*Public Library and other Buildings	Gloucester Corp.	Waller & Son, 17, College Green, Gloucester	do.
Large Oil Tank and Connexions	Stockport Corp.	S. Meunier, Engr. Gasworks, Portwood	July 6
*First Section of Hospital	Metropolitan Asylums Board	A. & C. Haraton, 15, Leadenhall-street, E.C.	do.
*Chapel	Thingoe Union	T. D. Atkinson, St. Mary's Passage, Cambridge	July 9
*Fire Engine Station	Hornsey U.D.C.	E. J. Lovegrove, Offices, Southwood-lane, Highgate, N.	July 11
Road Metal (500 tons)	Lewes T.C.	Borough Surveyor, Town Hall	July 23
*Painting at Barracks, Portsmouth	War Dept.	R.E. Office, Portsea	No date
School Building Improvements, The Ropewalk	Nottingham S.B.	Evans & Son, Archt. Wheelergate	do.
Schools and House, Kirkby	Kirkby-in-Ashfield S.B.	S. C. Smalley, School Board Offices	do.
Pavilion, Trent Bridge	Nottingham Forest Football Club	H. Gill, Archt. Pelham-street, Nottingham	do.
Additions to Inn, Holywood-street, Belfast	J. Byrne	J. J. M'Donnell, Archt. 27, Chichester-street, Belfast	do.
Business Premises, Howdon-road, North Shields	Bell & Taylor	J. Oswald, Archt. 33, Mosley-street, Newcastle-on-tyne	do.
Business Premises, Consett, co. Durham	Consett Indus. and Prov. Soc. Ltd.	Liddle & Brown, Archt. Mosley-street, Newcastle-on-Tyne	do.
Parochial House, Islandeady, Castlebar		W. Coen, Islandeady, Castlebar, co. Mayo	do.
Additions to Registry Offices, Northallerton	North Riding C.C.	W. Stead. C.E. County Offices, Northallerton	do.
Widening Stone Bridge, Leven	do.	do.	do.
Extension of Schools, Failsworth		W. Sugden & Son, Archt. Leek, Staffs.	do.
Additions to Buildings, &c. Ilsham Manor Farm. Torquay		Rendell & Symons, Surv. Newton Abbot	do.
Extensions to Mill, East-street, Leeds	Roberts, Mart, & Co.	Ambler & Bowman, Archt. 9, Park-place, Leeds	do.
Additions to Farm Buildings, Saxilby, Lincs.		W. Mortimer & Son, Archt. Lincoln	do.
Heating-work at Schools, Ballgate, Lancs.		do.	do
Drill Hall, &c. Cross-lane, Salford		Eaton & Co. Archt. Stamford-st. Ashton-under-Lyne	do.
Billiard Room, Library, &c. Brunt How, Loughrigg		R. Walker, Archt. Windermere	do.
Rebuilding Bull Hotel Property, Sedburgh	L. Chorley	J. Hutton, Archt. Kendal	do.
Cottage Hospital, Burford, Oxfordshire		T. H. Cheatle, Burford	do.
Council Offices	Spilsby R.D.C.	Surveyor, Council's Offices	do.
Factory, Saithouse-lane, Lincoln	J. Coombes & Co.	J. H. Cooper, Archt. Lincoln	do.
Decorating Shire Hall Buildings, Stafford	Staffs. C.C.	W. H. Cheatle, County Surveyor, Stafford	do.
House, Wesley-road, Armley, Leeds	H. Smith	C. F.Wilkinson, Archt. 35, Park-square, Leeds	do.
Alterations, White Horse Inn, Leeds	Melbourne Brewery Co.	T. Winn, Archt. 92, Albion-street, Leeds	do.
Alterations to Woodman Inn, Kirkstall, Leeds	do.	do.	do.
House, Colchester-road, Halstead, Essex	W. Simmons	Goodey & Cressall, Archt. Victoria-chmbrs. Colchester	do.
Warehouse, Junction Mills, Laisterdyke		T. Barker, Archt. 5, Bondstreet, Bradford	do.
Block of Shops, Botchergate, Carlisle	J. Harrison	J. Graham, Archt. Bankchmbrs. Carlisle	do.
Additions to School, Abbot-holme, Derbyshire		W. Sugden & Son, Archt. Leek, staffs.	do

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Surveying Assistant	Leicester Corp.	2*l.* 5s. per week	June 21
*Sewerage Assistant	do.	2*l.* 2s. per week	do.
*Building Inspector	Southend-on-Sea Corp.	104*l.* per annum	June 23
*Estimating and Measuring Assistant	London C.C.	3*l.* 10s. per week to commence	June 27
*Clerk of Works	Stafford Union		July 25
*Quantity Surveyor	N. E. Rly. Co.	400*l.* per annum	No date

Those marked with an asterisk (*) are advertised in this Number. *Competition, p.* iv. *Contracts, pp.* iv. vi. & viii. *Public Appointments, pp.* xviii. xix. & xxi.

4, Gt. Tower-st., u.t. 39 yrs., g.r. 150*l.*, r. 304*l.* 10s. £580

By FULLER & FULLER.

Camberwell.—Clarendon-st., &c., f.g.r. 48*l.*, reversion in 28 yrs. 2,090

Bethnal Green.—Pereira-st., &c., c.g.r. 156*l.*, reversions in 34 and 67 yrs. 2,960

By W. R. NICHOLAS & Co.

Newmarket, Cambs.—Bury-rd., four plots of building land, 1 a. 3 r. 2 p., f. 2,345

By OSBORN & MERCER.

Hawkshead, &c., Lancaster.—"The Wray Castle Estate," 830 a. 1 r. 3 p., f. 25,000

Crouch Hill.—29, Mountview-rd., u.t. 83 yrs., g.r. 10*l.* r. 63*l.* 630

By ALFRED RICHARDS.

Enfield.—Baker-st., "Fox Hall" and 2 a. 2 r. 18. p., f. 3,025

Waltham.—Eleanor Cross-rd., an enclosure of land 1 a. 1 r. 33 p., f. 110

By J. C. PLATT.

Hammersmith.—21, Iffley-rd., u.t. 82 yrs., g.r. 6*l.* 6s., e.r. 38*l.* 365

Fulham.—41 and 43, Coomer-rd., u.t. 73 yrs, g.r. 7*l.*, 10s., r. 64*l.* 12s. £600

Shepherd's Bush.—Godolphin-rd., "The Athenæum," u.t. 48 yrs., g.r. 28*l.* 900

By WALTON & LEE.

Cheshunt, Herts.—"Churchgate," "Arlesdene," and 1 a. 3 r. 20 p., f. 2,500

By W. N. WILLOUGHBY.

Norwood.—59, Thurlestone-rd., u.t. 84 yrs. g.r. 7*l.*, r. 32*l.* 285

5 and 6, Harpenden-rd., u.t. 97 yrs., g.r. 15*l.*, r. 80*l.* 850

By FLEURET, SONS, & ADAMS (at Masons' Hall Tavern).

Charing Cross.—St. Martin's-lane, "The Trafalgar" p.-h., u.t. 44 yrs., r. 100*l.*, with goodwill 7,620

Blackfriars.—Blackfriars-rd., "The Old King's Head" p.-h., a copyhold rental of 53*l.* 6s. 8d., reversion in 39½ yrs. 1,700

Covent Garden.—New-st., "The Green Man" p.-h, a freehold rental of 40*l.*, reversion in 16½ yrs. 1,000

By GREEN & SON (at Masons' Hall Tavern).

Kensington.—Kensington-sq., "The Greyhound" p.-h., f., r. 105*l.* £4,500

By ORGILL, MARKS, & ORGILL (at Masons' Hall Tavern).

Bayswater.—Bayswater-rd., "The Crown Hotel," u.t. 29½ yrs., r. 49*l.*, with goodwill 20,860

By R. SMITH & Co. (at Masons' Hall Tavern).

Strand.—Clare-st., "The Sun" p.-h., f., and "The Fountain" p.-h., u.t. 50 yrs., r. 120*l.*; "Stanhope-st., "The Crown" p.-h., u.t. 44 yrs., r. 100*l.*, with goodwills 33,500

By SCHOFIELD, EVANS, & Co. (at Masons' Hall Tavern).

Kensington.—High-st., "The Crown" p.-h., f., with goodwill 35,000

By A. PREECE (at Clapham Junction).

Battersea.—41 and 43, Harroway-rd., u.t. 79 yrs., g.r. 7*l.* 10s. 355

33, 35, and 37, Yelverton-rd., u.t. 79 yrs., g.r. 10*l.* 10s. 620

19, Russell-st., u.t. 61 yrs., g.r. 5*l.* 220

36, Park-grove, u.t. 61 yrs., g.r. 6*l.* 230

2, 4, and 6, Barmore-st., u.t. 57 yrs., g.r. 18*l.* — £435
4 and 5, Totteridge-rd., u.t. 79 yrs., g.r. 8*l.* 400
Teddington.—4, 5, and 6, Hampton-ter., u.t. 65 yrs., g.r. 15*l.* 720

By CUMBERLAND & SONS (at Derby).

Alvaston, &c., Derby.—Various enclosures of land and two cottages, 80a. 0r. 4p., f. 10,405
"Burnside House," and 103 a. 3r. 35p., f. 5,200
"Sinfin Fields Farm," 47 a. 0r. 27p., f. 3,710

By STEPHENSON & ALEXANDER (at Cowbridge).

Llandow, Glamorgan.—"The Great House Farm," 197 a. 3r. 32p., f. 6,800
Penlline, Glamorgan.—"Tyfry Farm," 31a. 1r. 37p., f. 800
"Court Farm," 73a. 3r. 9p., f. 3,500
"Penlline Court," and 32 a. 2r. 3p., f. 2,460
"Tewgoed Cottage," and 15a. 1r. 10p., f. 600
"Village Farm," 57 a. 3r. 24p., f. 2,400
Enclosures of land, 41 a. 0r. 3p., f. 1,720
Llangan, Glamorgan.—Various enclosures, 66 a. 3r. 18p., f. 2,020
Newton Cottage, Glamorgan.—Four enclosures, 13 a. 3r. 30p., f. 810

June 8.—By Messrs. LEAGE.

Regent's Pk.—6, Chalcot-cres., u.t. 31½ yrs., g.r. 8*l.*, r. 46*l.* 330

By F. JOLLY & CO.

Barking.—20, Tanner-st. and 1 to 16, Oxford-st., u.t. 79 yrs., g.r. 56*l.*, r. 271*l.* 1,500
Stepney.—95, Bromley-st., u.t. 9 yrs., g.r. 2*l.*, r. 30*l.* 155
Bethnal Green.—22 to 34 (even), Pereira-st., u.t. 67½ yrs., g.r. 24*l.* 10s. 710
Homerton.—3 and 4, Shepherd's-lane, c., r. 39*l.* 430

By RUSHWORTH & STEVENS.

Haverstock-hill.—80 and 82, Park-hill-road, u.t. 52½ yrs., g.r. 24*l.*, r. 110*l.* 945
Marylebone.—1, George-st., u.t. 75 yrs., g.r. 10*l.* 10s., r. 55*l.* 450

By RUTLEY, SON, & VINE.

Kentish Town.—39 and 41, Hartland-rd., u.t. 40½ yrs., g.r. 12*l.*, r. 82*l.* 650
Hartland-rd., a range of stabling, u.t. 40½ yrs., g.r. 4*l.* 17s. 6d., r. 34*l.* 200
43, Rhyl-st., u.t. 41 yrs., g.r. 7*l.*, e.r. 45*l.* 295
Hampstead.—37, Gascony-av., u.t. 83 yrs., g.r. 10*l.* 10s., e.r. 40*l.* 390
Highbury. — 3, Liberia-rd., u.t. 87 yrs., g.r. 6*l.* 17s., r. 38*l.* 405
Harringay.—118, Effingham-rd., u.t. 92 yrs., g.r. 5*l.*, r. 28*l.* 230

By DANIEL SMITH, SON, & OAKLEY.

Regent's Pk.—Gloucester-ter., i.g.r. 337*l.*, u.t. 28 and 24 yrs., g.r. 69*l.* 10s. 4,210

By R. TIDEY & SON.

Stockwell.—19, St. Martin's-rd., u.t. 665 yrs., g.r. nil, e.r. 55*l.* 700
Pimlico.—39, Moreton-st., u.t. 32 yrs., g.r. 8*l.* 10s., r. 55*l.* 470

By WARLTERS, LOVEJOY, & TELFER.

New Southgate.—7, The Parade, u.t. 96 yrs., g.r. 13*l.* 3s., r. 71*l.* 18s. 815
Hackney.—3 and 4, Aspland Grove, u.t. 62 yrs., g.r. 9*l.* 450

By DOUGLAS YOUNG & CO.

Ilford.—High-rd., &c., a block of building land, f. 5,250
Pimlico.—107 and 109, Ranelagh-rd., u.t. 35 yrs., g.r. 17*l.*, r. 96*l.* 840
Clapham.—16, Ferndale-rd., u.t. 72 yrs., g.r. 7*l.* 10s., e.r. 45*l.* 350
Bayswater.—147 to 157 (odd), Westbourne Grove, u.t. 91 yrs., g.r. 150*l.*, r. 419*l.* 6s. 6d. 2,010
Eastbourne, Sussex.—36 and 38, Cavendish-pl., f., r. 110*l.* 1,600
Streatham.—54, Stockfield-rd., u.t. 95 yrs., g.r. 7*l.*, r. 36*l.* 370
Brixton.—46, Dalberg-rd., u.t. 70 yrs.. g.r. 7*l.* 7s., r. 36*l.* 335

By STEPHENSON & ALEXANDER (at Cardiff).

Wenvoe, Glamorgan.—Freehold ground rents of 14*l.*, reversions in 25 and 20 yrs. 405
"The Old Shop Farm," 71 a. 2 r. 25 p., f. (in lots) 7,665

By KING & ADKIN (at Wantage).

East Hanney, Berks.—Enclosures of land, 37 a. 1r. 16p., f. 1,150
Two freehold cottages, and 1 a. 3 r. 15 p. 220
West Hanney, Berks.—Enclosures of land and a plot of garden ground, 3 a. 0 r. 29 p., f. 249

By YOUNG & HOWES (at Mangotsfield).

Mangotsfield, Glos.—"Oakland's Farm," 45 a. 3 r. 8 p., f. 3,100

By EDWARDS, SON & BIGWOOD (at Birmingham).

Bromsgrove Lickey, Worcester.—"Highfield House," and "Ivy Cottage" adjoining, f. 2,210
"Monument Farm," 31a. 0r. 7p., f. 1,540
Handsworth, Warwick.—31, St. Peter's-rd., f. 730

By HEPPER & SONS (at Leeds).

Leeds, Yorks.—27, 28, 29, and 30, St. John's-av., f., r. 58*l.* 1,015

By JAMES ACKROYD (at Keighley).

Oakworth, Yorks.—Three enclosures of land, 6 a. 0r. 28p., f. 237
Four freehold cottages and a corn mill 125

June 9.—By Arber, Rutter & Waghorn.

Lambeth.—Albert Embankment, f.g.r. 232*l.*, reversion in 41 yrs. 16.000
Bayswater.—36, Porchester-sq., and 1 and 2, Porchester-square Mews, u.t. 45¼ yrs., g.r. 2*l.*, r. 230*l.* 2,000

By H. J. BLISS & SONS.

Hackney.—8, Pembroke-ter., u.t. 73½ yrs., g.r. 6*l.* 6s. 240
Mile End.—207, Burdett-rd., u.t. 69 yrs., g.r. 6*l.*, r. 36*l.* 360
Leyton.—23, 25, and 27, Denmark-st., u.t. 85½ yrs., g.r. 9*l.* 465

By T. H. CURRIE.

Westbourne Pk.—6 and 8, Leamington-rd.-villas, u.t. 58 yrs., g r. 20*l.*, r. 115*l.* 1,020
23, Great Western-rd., u.t. 58 yrs., g.r. 7*l.* 10s., r. 42*l.* 430

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	8/0/0	0/0/0
Teak, E.I....load	9/5/0	14/5/0
Sequoia, U.S.ft.cu.	1/9/0	2/1/0
Ash, Canada, load	3/18/0	5/3/0
Birch, do.....	3/0/0	4/13/6
Elm, do.....	4/3/0	5/3/0
Fir, Dantsic, &c..	2/13/0	4/3/0
Oak, do.....	2/0/0	3/0/0
Canada	3/15/0	5/0/0
Pine, Canada red	0/0/0	0/0/0
Do. yellow	2/18/0	4/18/0
Lath, Dantsic,fath	4/10/0	5/10/0
St. Petersburg..	5/0/0	6/10/0
Wainscot, Riga, &c., log.....	4/18/0	5/18/0
Odessa, crown....	4/18/0	5/18/0
Deals, Finland 2nd & 1st std 100	8/15/0	9/5/0
Do. 4th & 3rd ..	8/15/0	9/5/0
Do. Riga	7/5/0	8/5/0
St. Petersburg, 1st yellow	20/15/0	13/1/0
Do. 2nd yellow.	9/15/0	11/5/0
Do. white.....	9/5/0	11/5/0
Swedish	9/15/0	16/5/0
White Sea	10/5/0	16/5/0
Canada, Pine 1st	18/15/0	24/15/0
Do. do. 2nd	13/5/0	15/15/0
Do. do. 3rd, &c.	5/15/0	9/5/0
Do. Spruce, 1st	10/15/0	12/5/0
Do. do. 3rd and 2nd	8/5/0	9/5/0
New Brunswick	7/5/0	8/5/0
Battens all kinds	5/0/0	18/0/0
Flooring boards, sq., 1 in. prep. 1st.....	9/6	17/9
Do. 2nd	8/0	13/6
Other qualities—	6/3	7/1
Cedar, Cuba, ft.	/4	/4½
Honduras, &c.	/3½	/4½
Mahogany, Cuba	/5½	/7
St. Domingo, cargo av.	/5	0/2/3
Mexican, do. do.	/3½	/4
Tobasco, do. do.	/4	/6½
Honduras, do.	/4	/6
Box, Turkey, ton	4/0/0	15/0/0
Rose, Rio	7/0/0	14/0/0
Bahia	6/0 0	12/0/0
Satin, St. Doming.	0/0/5	0/1/0

TIMBER *(continued)*.		
Satin, Porto Rico	0/0/6	0/1/6
Walnut, Italian ..	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland .....ton	2/5/8½	0/0/0
Bar, Welsh, in London	5/15/0	5/17/6
Do. do. at works in Wales	5/10/0	5/12/6
Do. Staffordshire, in London.....	6/5/0	7/10/0
COPPER — British cake and ingot	53/15/0	54/5/0
Best selected ..	54/5/0	55/15/0
Sheets, strong..	59/10/0	60/0/0
Chili bars	50/2/6	0/0/0
YELLOW MTL. lb.	5d.	5¼d.
LEAD — Pig Spanish ....ton	13/15/0	0/0/0
English com. bands	14/0/0	0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards ..	15/0/0	0/0/0
Pipe.....	15/10/0	0/0/0
ZINC — English sheet.....ton	23/0/0	0/0/0
Vieille Montagne	23/10/0	0/0/0
Spelter	19/16/3	19/17/6
TIN—Straits	68/2/6	0/0/0
Australian.....	68/12/6	69/2/6
English Ingots..	70/15/0	71/15/0
Banca	61/0/0	0/0/0
Billiton	59/15/0	60/0/0
OILS.		
Linseed .....ton	17/2/6	0/0/0
Cocoanut, Cochin	27/15/0	0/0/0
Do. Ceylon.....	22/0/0	0/0/0
Palm, Lagos	21/15/0	0/0/0
Rapeseed, English pale	27/10/0	0/0/0
Do. Brown	26/0/0	0/0/0
Cottonseed ref....	14/5/0	15/5/0
Oleine.....	13/10/0	14/10/0
Lubricating U.S.	0/5/3	0/7/6
Do. Black	0/5/0	0/6/6
TAR — Stockholm barrel	1/5/0	0/0/0
Archangel	0/12/6	0/0/0
Turpentine	23/12/6	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

AMBLE.—For New Mead Memorial School at Amble (Northumberland), for the National School Managers. Mr. J. Wight Douglas, architect, Alnwick. Quantities by architect:—

A. Douglas	£2,018 0	Carse & Son, Amble, Acklington*	£1,996 3

* Accepted.

Several separate tenders for the various trades were also accepted.

ANNAN (N.B.).—For the erection of a public slaughter-house, Burgh Merse, for the Burgh Commissioners. Mr. A. Tweedie, Surveyor, Lady-street, Annan:—

Masonry and Brickwork—G. Elliot	£475 0 0
Joinery.—J. Rutherford	165 10 0
Plumbing.—J. S. Millar & Sons	19 0 0
Slating.—I. McLauchalan	68 2 0
Cement Work.—G. T. Tweedie	75 8 1

[All of Annan.]

BANGOR.—For erecting five houses in Farrar-road, Bangor, for Mr. W. Farrar Roberts. Mr. Richard Hall, architect, Bangor. Quantities by the architect:—

R. & J. Williams....	£4,745 0 0	J. Hamilton & Son	£3,895 0 0
Watkin Jones	4,469 10 0	Jones & Williams	3,870 0 0
Robert Williams....	3 943 4 4	William Parry, Bangor*	3,786 16 0
Evan Williams.. ...	3,925 16 9		

* Accepted subject to modifications.

BASLOW (Derbyshire).—Accepted for the erection of a residence, for Mr. E. M. Wrench. Mr. E. Morewood Longsdon, architect, Bakewell. Quantities by architect:—

T. Allsop & Son, Bakewell	£1,450

BISHOP AUCKLAND.—Accepted, on schedule of prices, for the erection of thirteen houses, Etherley-lane, for the Co-operative Society. Mr. Wm. Perkins, architect, Victoria-street, Bishop Auckland:—

T. Hilton, Bishop Auckland.

BLYTH (Northumberland).—For the erection of business premises, York and Regent-streets, for the Central Industrial and Provident Co-operative Society, Limited. Mr. A. A. Windle, architect, 10, Waterloo-road, Blyth:—

D. Weightman	£4,643 6 8	J. Goulding & Sons..	£3,368 0 0
R. J Harbottle	4,171 0 0	R. Baxter	3,295 0 0
H. Bower.....	3,868 2 1	Barron & Temple, Waterloo, Blyth*	3,156 9 3
W. How, jun.	3,568 0 0		
J. & W. Simpson ..	3,515 10 0		

* Accepted.

BROADSTAIRS.—Accepted for building fourteen houses in Gladstone-road, Broadstairs, in two blocks of six and eight each. Mr. A. J. Sheffield, architect, 35, Eastcheap, E.C.:—

T. Hurley (at £350 each house) £4,900

CAERPHILLY.—For the erection of sixteen houses, Aber, for the Panteg Building Club. Messrs. Griffiths & Jones, architects, Tonypandy and Llandaff:—

J. Bowen	£3,120	J. P. Williams, Lenghenith, nr. Caerphilly*	£2,760
D. Evans & Sons	2,928		
G. H. Leonard	2,928	J. Lewis.....	2,736

* Accepted.

CLAYGATE.—Accepted for erecting four villas, Claygate, Surrey, for the Hon. C. J. F. Foley. Mr. H. Knight, architect, London:—

Pater & Co..... £3,600

CROYDON.—For erecting three shop premises, on the site of Nos. 104 and 106, High-street. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

S. Hart	£3,700	E. J. Saunders	£3,509
I. Smith & Sons	3,679	W. Smith & Son	3,487
F. W. Sedgwick..	3,673	A. Bullock	3,484
S. Page	3,588	W. Pearson & Co.....	3 36 1
E. P. Bulled & Co.	3,500	D. W. Barker (accepted)..	3,329

CROYDON.—For building stabling at rear of Jubilee Buildings, George-street. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect:—

A. Bullock	£720	E. J. Saunders	£666
S. Page	715	W. Smith & Son.....	641
E. P. Bulled & Co.	705	D. W. Barker	639
J. Horrocks	689	S. Hart	575
J. Smith & Sons	683	Pearson & Co. (accepted) ..	555

EAST MOLESEY.—Accepted for erecting a pair of semi detached villas, East Molesey, for Mr. J. A. Milner. Mr. H Knight, architect, London:—

Pater & Co..... £1,720

EAST MOLESEY.—Accepted for erecting one semi-detached villa, East Molesey, for Mr. J. A. Milner. Mr. H. Knight, architect, London:—

Pater & Co. £940

ESHER.—Accepted for erecting five villas, Esher, Surrey, for Mr. C. C. Wyllie. Mr. H. Knight, architect, London:—

Wheatley & Sons..... £8,120

HUDDERSFIELD.—For the erection of five houses, Somerset-road, for the Oddfellows. Mr. J. Berry, architect, 9, Queen-street, Huddersfield:—

Masonry.—J. Capper, Almondbury..
Joinery.—F. Greensmith, Dalton.....
Plumbing.—S. Hale, Huddersfield .....
Painting.—A. Dobson, Almondbury .....
Plastering.—Broadbent Bros., Moldgreen .....
Slating.—D. Tunnacliffe, Huddersfield.....
Concreting.—J. Cooke, Rashcliffe.....
} £1,600

HUDDERSFIELD.—For the erection of four dwelling-houses, &c, Greenside, Dalton, for the Industrial Society. Mr. J. Berry, architect, 9, Queen-street, Huddersfield:—

Masonry.—Bentley & Swift, Kirkheaton .....
Joinery.—F. Greensmith, Dalton .....
Plumbing—Sanderson Bros., Rashcliffe .....
Plastering.—Broadbent Bros., Moldgreen ....
Painting.—Wood & Atkinson, Huddersfield.....
Slating.—J. B. Tunnacliffe, Huddersfield.....
Concreting.—John Cooke, Rashcliffe.....
} £1,200

ILFORD.—For the erection of seven houses on "The Cauliflower" Estate, Aldborough-road, Ilford, Essex. Mr. A. J. Sheffield, architect, Eastcheap, E.C.:—

F. W. Serff	£3,000	C. Everard (accepted) ..	£2,520
William Wheeler	2,625		

ILFORD.—For making up and draining the road on the "Cauliflower Estate" known as Lombard-avenue:—

D. T. Jackson	£662	W. Gibbs (accepted)	£658

LEICESTER.—For the execution of sewerage works, Oadby, for the Blaby Rural District Council. Mr. H. Walker, C.E., Newcastle-chambers, Angel-row, Nottingham. Quantities by Engineer:—

Robert Brant £4,496 14 6		J. H. Vickers, Ltd.	£3,680 0 0
Bentley & Loch ...	4,082 0 0	Cope & Raynor	3,647 0 0
Thos. Philbrick	4,000 0 0	A. Jewell	3,600 0 0
Siddons & Freeman	3,970 0 0	John Lane & Son, Skegby, Notts*	3,413 0 0
Henry Vickers	3,869 0 0		
Fredk. Messom....	3,863 0 0	H. H. Barry (without drawn)	3,235 0 0
John Holme.....	3,755 2 6		

[Engineer's estimate, £3,600.]

* Accepted.

LONDON.—For the erection of the Empire Theatre, Stratford. Mr. W. R. G. Sprague, architect:—

Grover & Sons	£22,739	Howell J. Williams	£19,956
Howe & Co.	22,275	Perry & Co.	19,850
Chessum & Son	21,845	Shurman	19,798
C. Grey Hill	21,650	Patman & Fotheringham	19,789
Allen & Son	20,248	McCormick & Son	19,480
Downs	20,175	Wallis	19,227
Beer & Gash	20,075	Kirk & Randall	18,937
Gregar & Son	19,995	Miskin & Son	18,830
Kearley	19,975	Longden & Son	17,595

LONDON.—For the erection of a warehouse, Blackfriars-road, S.E., for Messrs. J. Cohen & Co. Mr. C. H. Mack, architect, 9, Bedford-row, W.C.:—

Holloway Bros.	£7,150	Patman & Fotheringham..	£6,97
Rider & Son	6,584	Wall & Co.....	6,64
Eddie.....	6,464	Smith & Son.....	5,96
Fry	6,424	Balaam Bros.	5,84
R. & E. Evans	6,382		

LONDON.—For alterations and improvements to No. 15, Russell-square, W.C. Mr. W. Ernest Hazell, architect, 23, Moorgate-street:—

J. Greenwood	£2,028	J. Carmichael	£1,936
R. E. Worsley & Co.	2,016	Parkinson & Son*	1,869
Stevens Bros.	1,938		

* Accepted.

LONDON.—For re-instating premises after fire, for Wood Decorating Co., Homerton, N.E.:—

Coleman	£645	Silk & Son*	£600

* Accepted.

LONDON.—For pulling down and rebuilding the "Lord Collingwood," Collingwood-street, E., for Mr. Lable. Mr. A. C. Payne, architect:—

Ansell	£3,330	Wm. Irwin.....	£2,796
Speechley & Smith	3,015	Wilson	2,689

LONDON.—For additions to Coleman-street Ward Schools. Mr. Martin L. Saunders, architect:—

Woodward & Co. £351 0		J. W. Heeps	£273 10
Lark & Son	275 0		

LONDON.—For decorations to staircases at 31, 36, and 38, Lombard-street, E.C. Mr. Martin L. Saunders, architect:—

Colls & Sons	£424	Staines & Sons	£414
J. W. Heeps	417	Woodward & Co.	

LONDON.—Accepted for new shop front at 87, City-road. Mr A. J. Martin, architect:—

J. W. Heeps £226

LONDON.—For a block of isolation wards at the Eastern Hospital, The Grove, Homerton, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, Architects, 15, Leadenhall-street, E.C. Quantities by Mr. F. H. A. Hardcastle:—

Leslie & Co., Ltd. £2,722		Spencer, Santo & Co., Ltd.	£2,161
E. Lawrance & Sons	2,566	C. Miskin	2,090
J. Shillitoe & Son	2,303	W. Johnson & Co., Ltd., Wandsworth Common*	2,061
McCormick & Son	2,172		

* Accepted.

LONDON.—For a group of workshops at the Eastern Hospital, Homerton, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, Architects, 15, Leadenhall-street, E.C. Quantities not supplied:—

W. Shurmur.....£696		E. Lawrance & Son.....	£565
McCormick & Son	593	W. Johnson & Co.....	563
J. W. Pavey.....	579	Barrett & Power, Hackney*	550

* Accepted.

LONDON.—Accepted for fitting-up Bishopsgate Station Restaurant, for the Metropolitan Railway. Mr. H. Knight, architect, London :—
Sage & Co. £720

LONDON.—Accepted for rebuilding the "White Lion," Upper Thames-street, for Mr. L. H. Cross. Mr. H. Knight, architect, London :—

	Structure.	Fittings.
Turtle & Appleton	£3,730	£920

LONDON.—Accepted for rebuilding 110, Great Portland-street, W., for Sir Henry Knight. Mr. H. Knight, architect, London :—
G. Chase & Son £2,400

LONDON.—Accepted for alterations, 38, Red Cross-street, E.C., for London and Midland Bank. Mr. H. Knight, architect, London :—
J. Milroy £1,720

LONDON.—Accepted for alterations, "Crown and Anchor," Finsbury-pavement, for Messrs. Worthington & Co. Mr. H. Knight, architect, London :—
G. Kirby £1,430

LONDON.—Accepted for new bay window, redrainage, &c., at No. 6, Dawson-place, Pembridge-square, W. Mr. William A. Pite, architect :—
F. T. Chinchen £650

LONDON.—For repairs to be done at the Licensed Victuallers' Asylum, Asylum-road, Old Kent-road, S.E. Mr. W. F. Potter, architect :—

Maxwell Bros.	£448 0	W. Croft	£220 0
Buchan Bros.	383 0	F. Dawes, Peckham Rye (accepted)	195 0
R. J. Young	261 18		

MILL HILL (Middlesex).—For alterations to schoolroom, for the Governors of Mill Hill School. Mr. A. Bradley Rooke, architect. Quantities by Mr. E. J. Paine :—

Higgs & Hill	£1,642	J. T. Steed	£1,237
Cowley & Drake	1,148	W. Irwin	1,033
Houghton & Son	1,148	Gough & Co.	598

MERTON (Surrey).—For the erection of three houses for Mr. W. C. Ware. Mr. H. P. Burke Downing, architect, 7, Great College-street, Westminster :—

R. S. Ronald	£2,773	James Burgess	£2,270
John Garrett & Son	2,388	G. P. & H. Barnes	2, 62

PENRITH.—Accepted for the erection of Penrith Cottage Hospital. Messrs. G. Watson & Son, architects, Penrith :—

Masonry, &c.—W. Forrester	£658 2 9
Joinery, &c.—J. Richardson & Son	409 13 0
Slating.—J. Bailey	119 10 0
Plumbing, &c.—J. & W. Scott	225 0 0
	£1,412 5 9

PURSTON (Yorks).—For the erection of a villa residence, for Mr. W. Cowling. Messrs. Garside & Keyworth, architects, Pontefract :—

Bricklaying.—A. Taylor, Pontefract	£242 0 0
Joinery.—J. R. Goodill, Pontefract	100 0 0
Slating.—W. Atkinson, Leeds	25 18 0
Plumbing.—Keighley & Westwood, Pontefract	48 7 3
Plastering.—T. P. Jones & Son, Featherstone..	33 0 0
Painting.—Burton & Son, Pontefract	8 0 0
	£457 5 3

RUSHDEN.—For the erection of new house and shop, lock-up-shop and offices, High-street, Rushden, for Mr. J. Northern. Mr. Harry Knight, architect, Rushden :—

Hacksley Bros.	£889 0	C. E. Bayes	£808 10
Dickens Bros.	860 0	F. Henson	805 0
T. & C. Berrill	843 0	E. Mitchell	770 0
Whittington & Tomlin .	839 0	R. Marriott*	750 0
W. T. Willmott	823 0		

* Accepted.

RASTRICK.—Accepted for the erection of teachers' rooms, &c., Longroyd and Common Schools. Mr. B. Stocks, architect, St. Peter's-street, Huddersfield. Quantities by architect :—

Longroyd Schools.

Masonry.—John Bottomley, Brighouse	£98 10 0
Joinery.—Stott & Ogden, Brighouse	54 16 4
Plumbing.—F. Ogden, Brighouse	29 2 0
Slating.—J. Smithies, Brighouse	29 5 6
Plastering.—C. Heponstall, Brighouse	13 14 0
Painting.—A. Marshall, Brighouse	6 0 0
Heating Engineer.—J. W. Thornton, Huddersfield	18 16 9

Common Schools.

Masonry.—J. Bottomley, Brighouse	28 5 0
Joinery.—T. A. Hirst, Brighouse	13 10 0
Plastering.—C. Heponstall, Brighouse	4 12 0
Painting.—A. Marshall, Brighouse	3 0 0
Heating Engineer.—J. W. Thornton, Huddersfield	5 15 6

TO CORRESPONDENTS.

S.S.—J. W. S.—A. & W., R. & W. (Amounts should have been stated).—A. D. (Below our limit). S. & Co. (Too late : next week).

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR ; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom, at the rate of 19s. per annum PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to DOUGLAS FOURDRINIER) should be addressed to the publisher of "THE BUILDER," No. 46, Catherine-street, W.C.

SUBSCRIBERS in LONDON and the SUBURBS (by prepaying at the Publishing Office, 19s. per annum or 4s. 9d. per quarter), can ensure receiving "The Builder," by *Friday Morning's Post.*

W. H. Lascelles & Co.,
121, BUNHILL ROW, LONDON, E.C.
Telephone No. 270.
HIGH-CLASS JOINERY,
LASCELLES' CONCRETE
Architects' Designs are carried out with the greatest care.
CONSERVATORIES,
GREENHOUSES,
WOODEN BUILDINGS,
Bank, Office, & Shop Fittings.
CHURCH BENCHES & PULPITS.
ESTIMATES GIVEN ON APPLICATION.

THE BATH STONE FIRMS, Ltd.
BATH,
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
DOULTING STONE.
The Ham Hill and Doulting Stone Co.
(Incorporating The Ham Hill Stone Co. and C. Trask & Son The Doulting Stone Co.).
Chief Office :—Norton, Stoke-under-Ham, Somerset.
London Agent :—Mr. E. A. Williams, 16, Craven-street, Strand.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

SPRAGUE & CO., Ltd.,
LITHOGRAPHERS,
Employ a large and efficient Staff especially for Bills of Quantities, &c.
4 & 5, East Harding-st., Fetter-lane, E.C. [ADVT.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.
METCHIM & SON { 8, PRINCES STREET, GT. GEORGE ST. WESTMINSTER
"QUANTITY SURVEYORS' DIARY AND TABLES," For 1898, price 6d. post 7d. In leather 1/- Post 1/1 [ADVT.

Ernest Mathews & Co.
61, St. Mary Axe, E.C.
SLATES, SLABWORK,
Enamelled Slate,
Marble,
Permanent Green Slates.
WORKS:
Bow, London, E. and
Aberllefenny, North Wales.
BRANCH HOUSE:
37, Victoria-street, Bristol.

PILKINGTON & CO
(ESTABLISHED 1838),
MONUMENT CHAMBERS,
KING WILLIAM STREET, LONDON, E.C.
Telephone No., 2751 Avenue
Registered Trade Mark,
Polonceau Asphalte.
PATENT ASPHALTE and FELT ROOFING.
ACID-RESISTING ASPHALTE.
WHITE SILICA PAVING
SEYSSEL ASPHALTE.

C. B. N. SNEWIN
MAHOGANY, WAINSCOT, WALNUT,
TEAK, VENEER, and TIMBER MERCHANT,
Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, & 17, BACK HILL, HATTON GARDEN, and 29, RAY STREET, FARRINGDON ROAD, E.C.
THE LARGEST STOCK OF ALL KINDS OF WOODS IN EVERY THICKNESS, DRY, AND FIT FOR IMMEDIATE USE.
Telephone, No. 274 Holborn. Tele. Address: "SNEWIN, London."

W. DUFFY'S PATENT
IMMOVABLE ACME
WOOD BLOCK FLOORING.
THE PERFECT FLOORING FOR ALL PURPOSES.
Seven Gold Medals, four Silver, two Bronze Medals, and Certificate of Sanitary Institute of Great Britain.
Full Particulars and Prices on application to
THE ACME WOOD FLOORING COMPANY, LTD.
Chief Offices and Works: Gainsborough Road, Victoria Park, London, N.E.

BRONZE BRACKET
ITALIAN 16TH CENT.

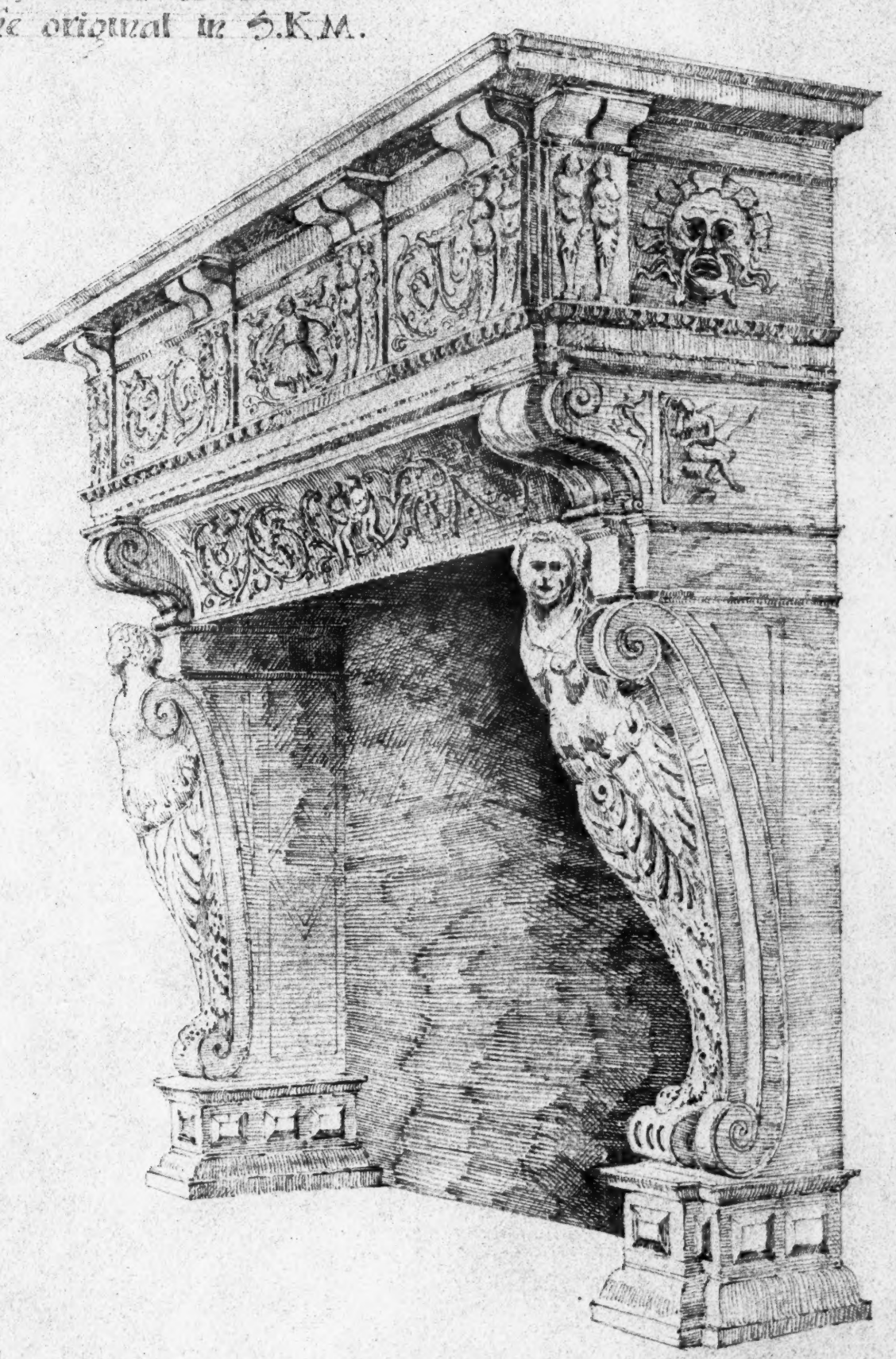
A. F. Darnell.
May 98.

GENERAL LIBRARY,
UNIV. OF MICH.
27 JUN 1898

INK-PHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

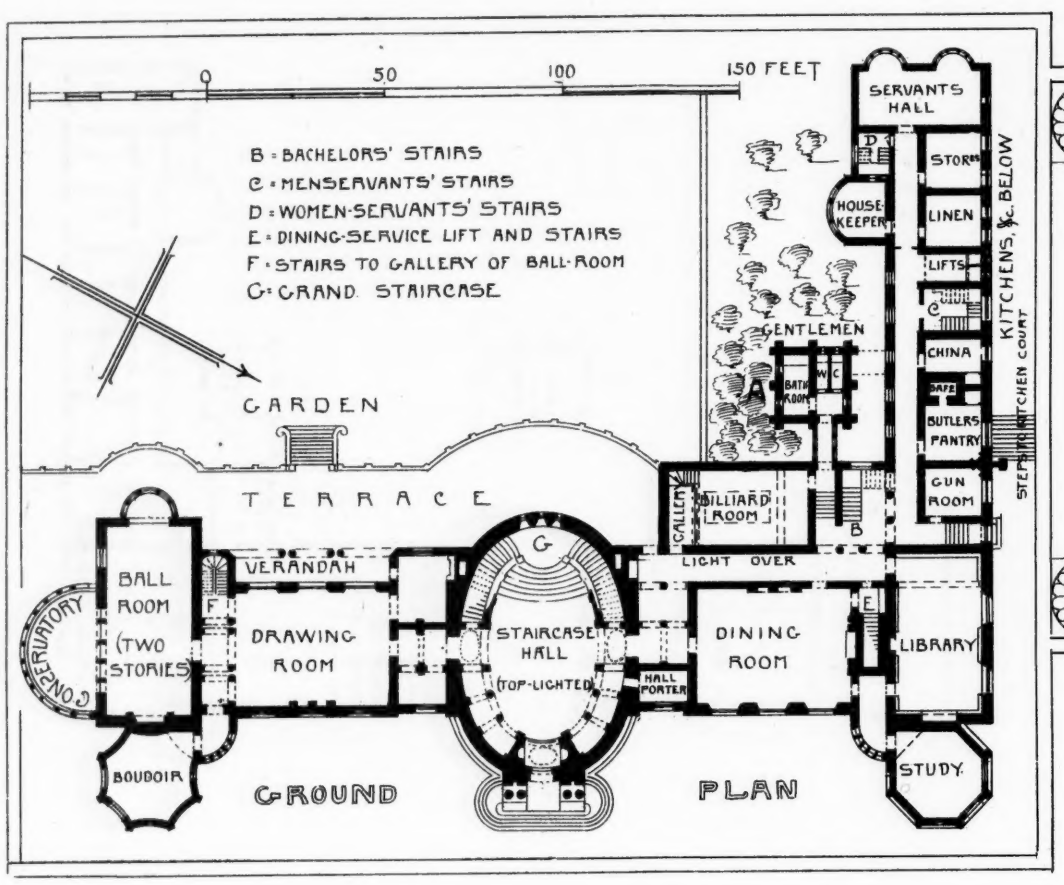
GENERAL LIBRARY,
UNIV. OF MICH.
27 JUN 1898

Chimney Piece in carved stone
from a Palace near Brescia
Italian, about 1560
from the original in S.K.M.

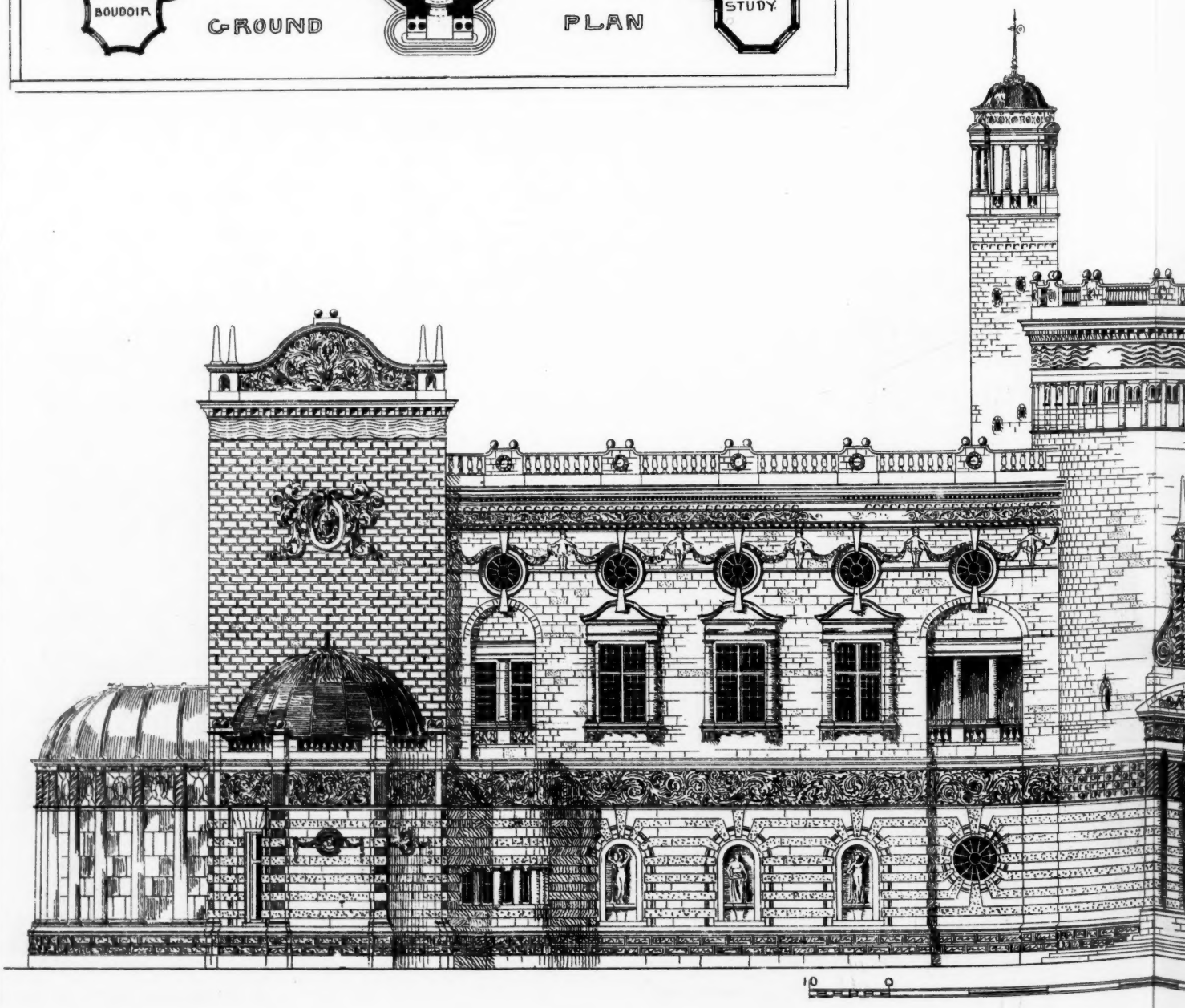


F.L. Wyming

INK-PHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.



PROPOSED·M
PLANNED·WITH·THE·S
OF·COMBINING·SYMMET
MENT·OF·THE·PRINCIPA
CONTRARY·ASPECT·FRO
LY·STAIRCASE·AND·CON
LATRINES·IN·A·SEPARA

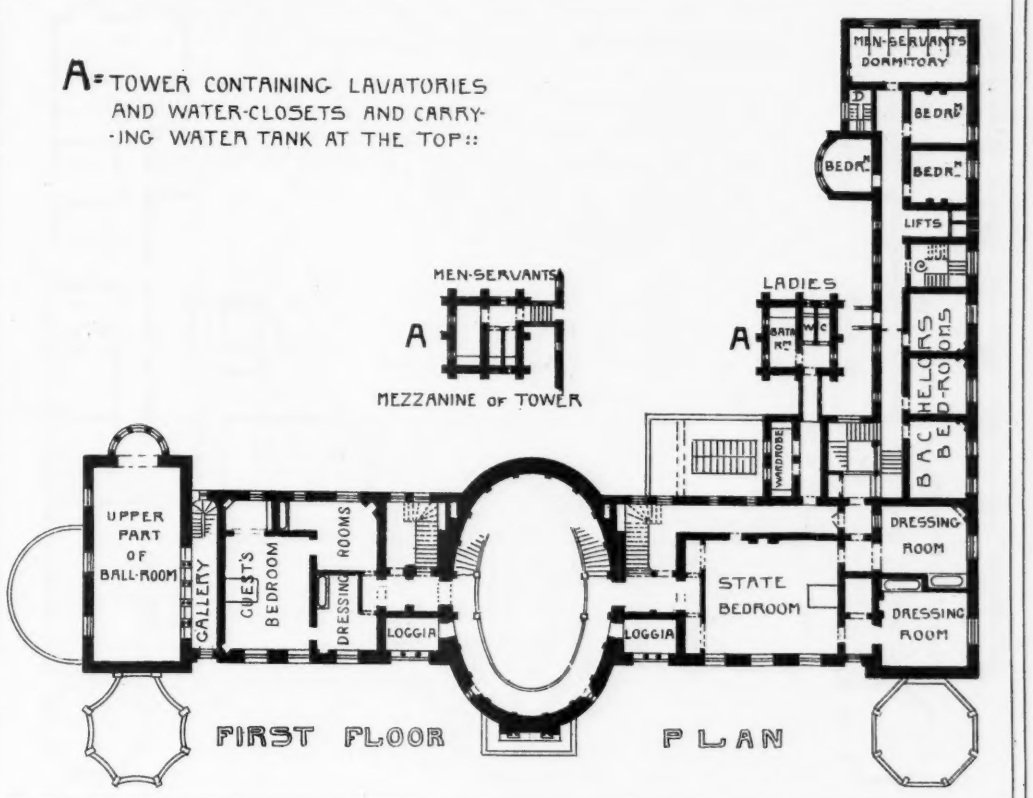


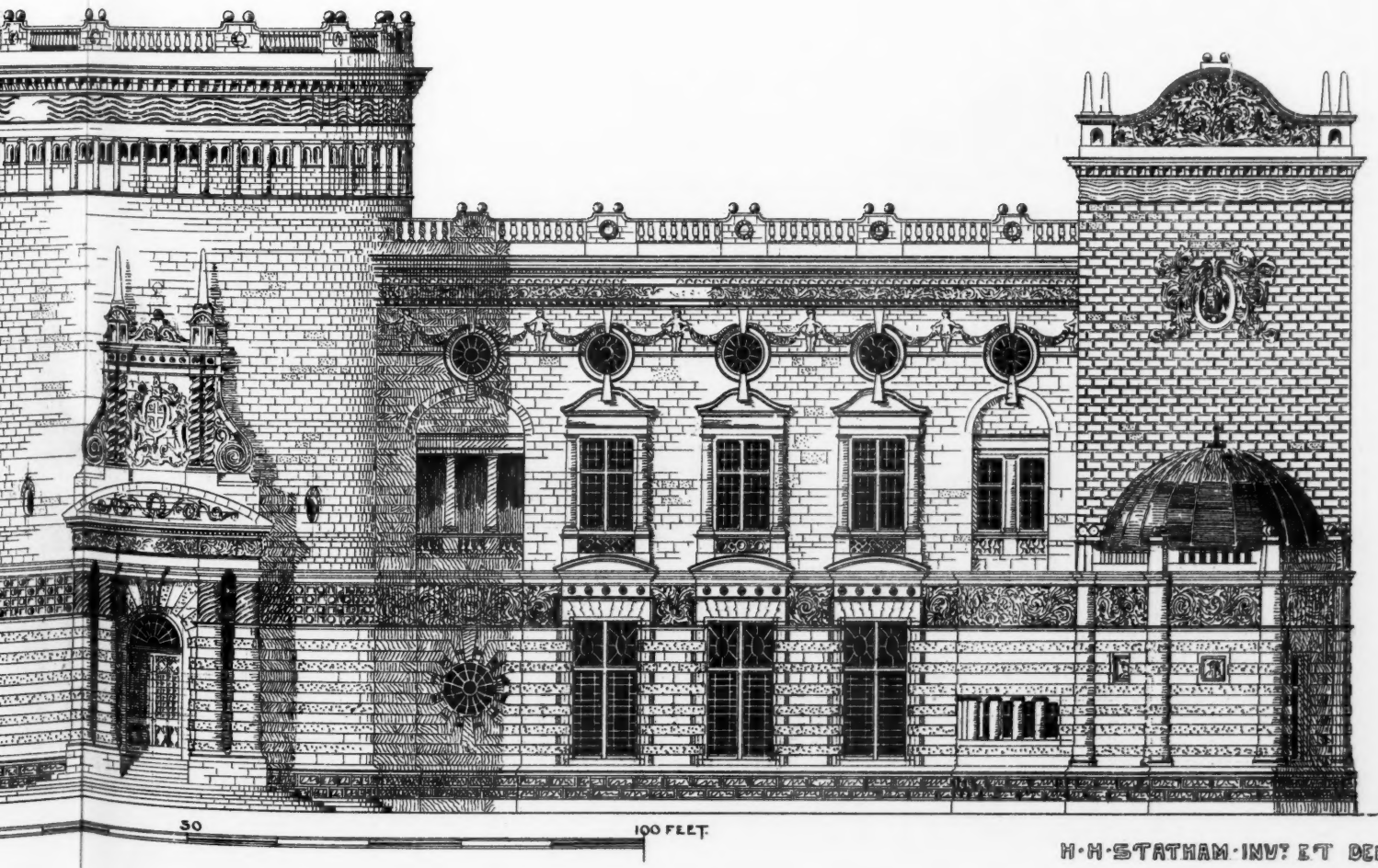
PROPOSED MANSION: ELEVATION AND PLANS.—MR

GENERAL LIBRARY,
UNIV. OF MICH.
27 JUN 1898

OSED·MANSION·
ITH·THE·SPECIAL·OBJECT·
NG·SYMMETRICAL·ARRANGE
HE·PRINCIPAL·ROOMS·WITH
SPECT·PROVIDING·A·STATE
ASE·AND·CONCENTRATING·
N·A·SEPARATE·BUILDING·

A= TOWER CONTAINING LAVATORIES AND WATER-CLOSETS AND CARRY-ING WATER TANK AT THE TOP::

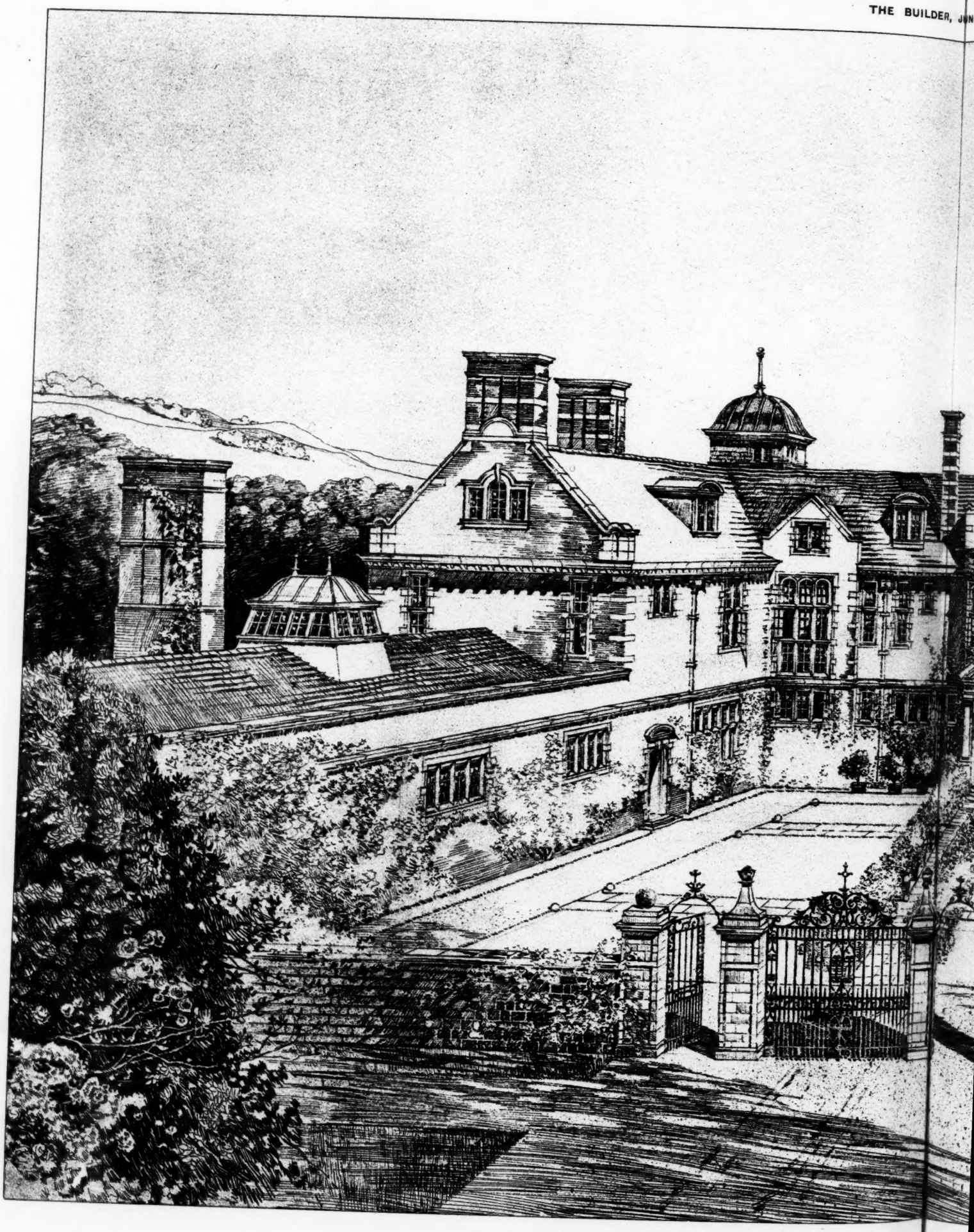




H·H·STATHAM·INV? ET DEL?

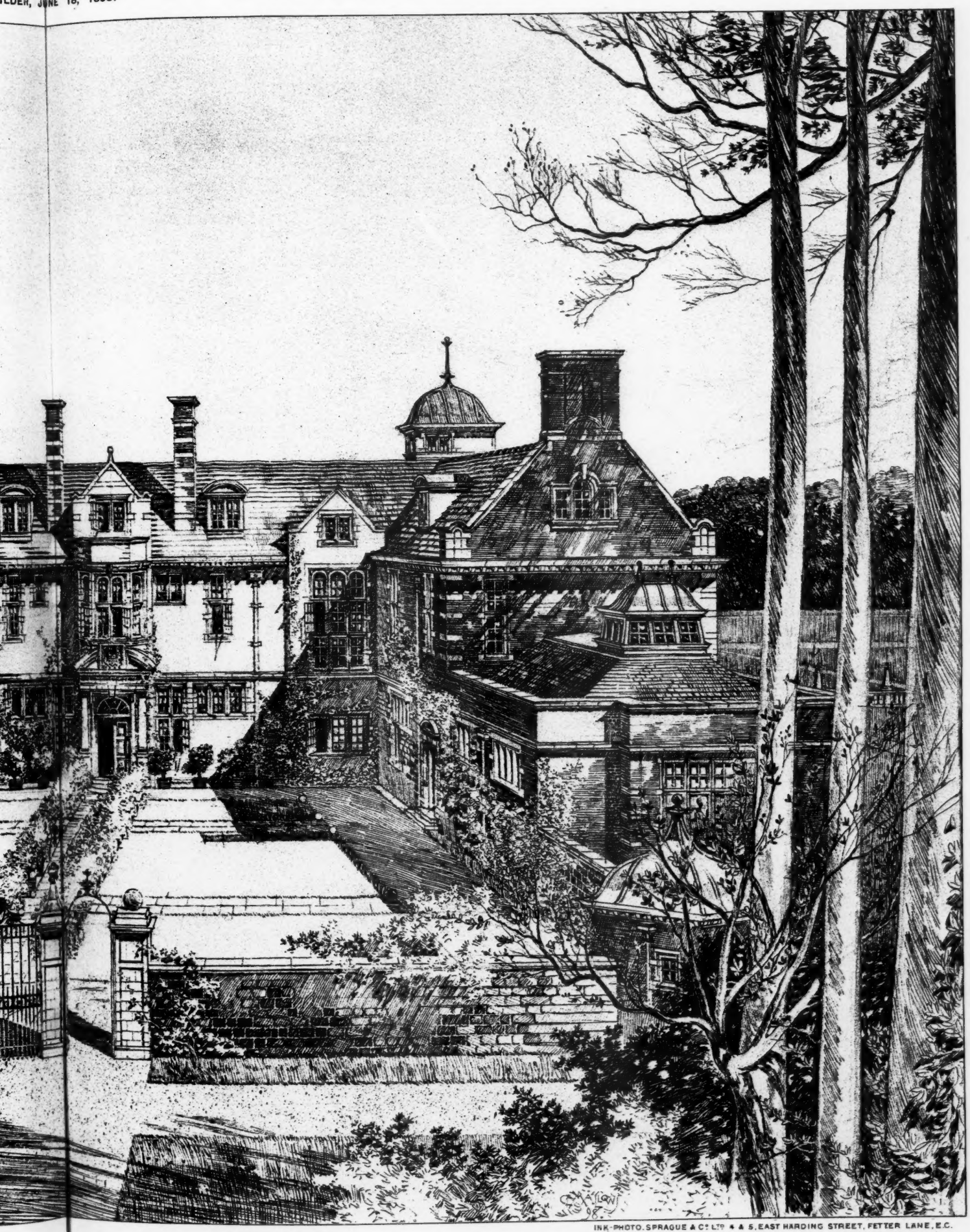
PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

D PLANS—Mr. H. Heathcote Statham, F.R.I.B.A., Architect.



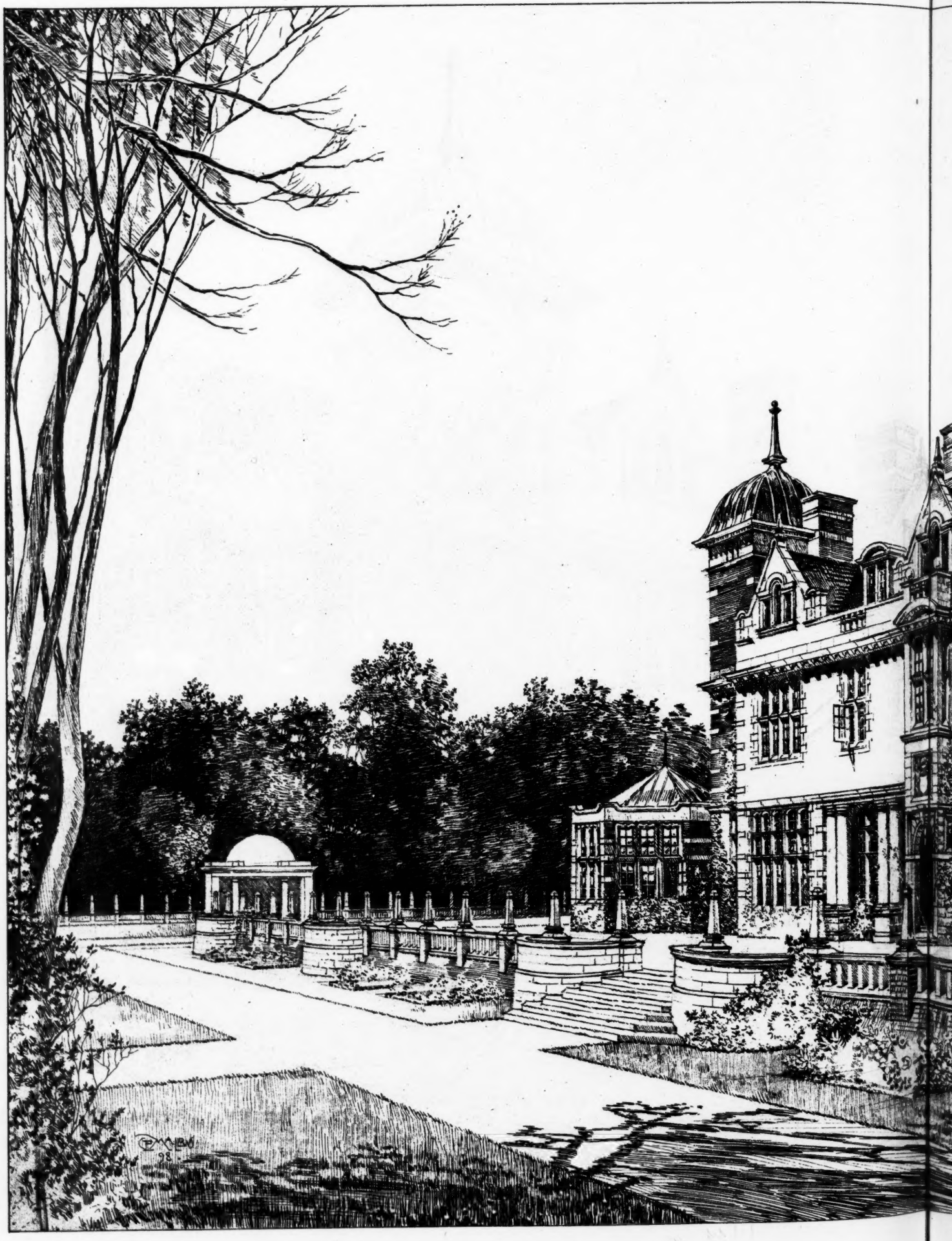
"HILDON," HANTS.—MR. ASTON WEBB,

GENERAL LIBRARY,
UNIV. OF MICH.
27 JUN 1898



INK-PHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

S.—MR. ASTON WEBB, F.R.I.B.A., ARCHITECT.



"HILDON," HANTS.—MR. ASTON WEB

GENERAL LIBRARY,
UNIV. OF MICH.
27 JUN 1898

INK-PHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

—Mr. Aston Webb, F.R.I.B.A., Architect.